B 612497
AMERICAN
SEP 24 1956

NINETY-EIGHTH YEAR

American Gas Journal

SEPTEMBER, 1956

Only Magazine Published Exclusively for the Gas Utility Industry

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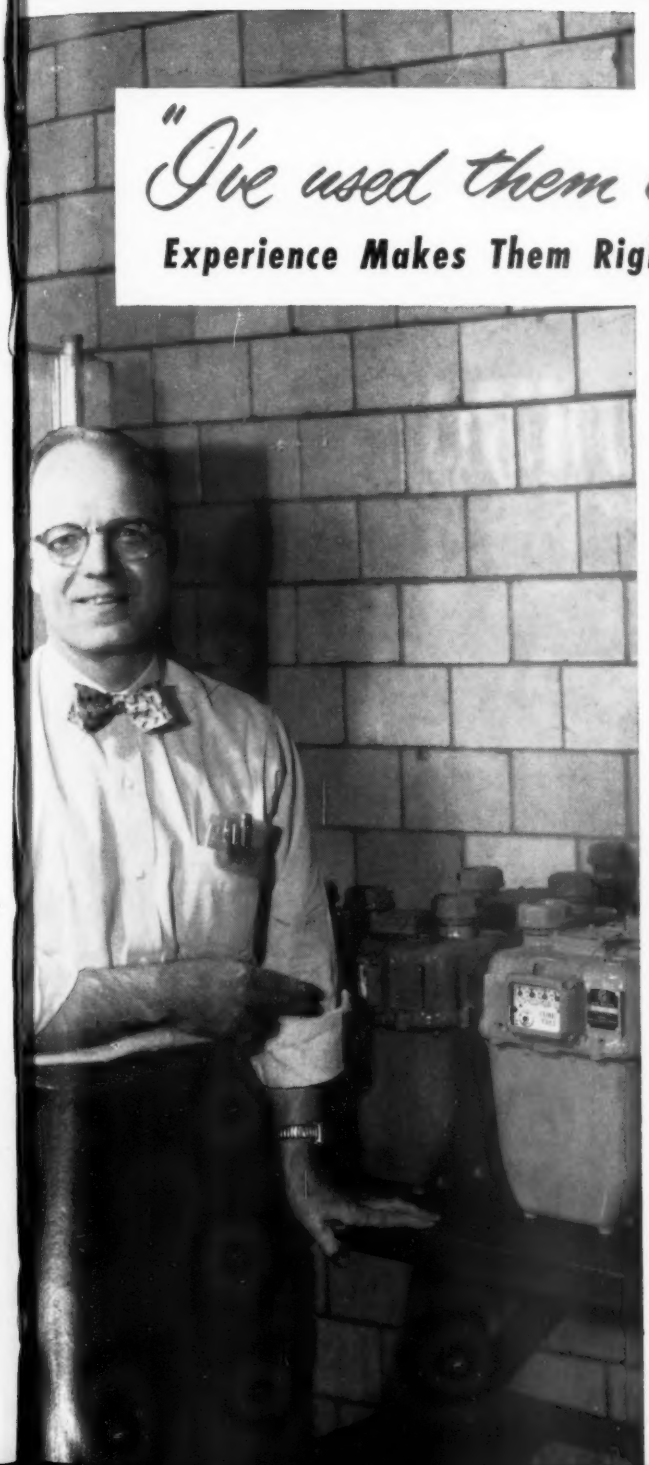
SERIAL RECORD
OCT 1 - 1956

"I've used them ever since I was a Pup"

Experience Makes Them Right—Modern Design Makes Them Better



The original Rockwell meter design was developed over 50 years ago. Basic to it was a cast iron bowl type body with a removable valve plate to which all working parts are attached. With minor improvements the original design served and served well through the immediate post-war years. We could have very successfully continued with our same meter patterns, as did other manufacturers.

But Rockwell engineers always are working for betterment. They realized that technological advances in materials and methods opened the way to an entirely new concept in meter design and construction. The result: all-new Rockwell aluminum meters, now available in a wide range of sizes.

Today's Rockwell meters are smaller, lighter, smoother running. There is only a single main joint to seal against leakage. They still offer you the safety of a bowl type body—also the maintenance ease of a unit replaceable working mechanism. Shafts, gears and pinions are heavier. All bearing points are protected with oil-impregnated bronze bushings. In every way Rockwell aluminum meters are engineered and built to standards far exceeding those of the past. Because of this you benefit from a higher degree of sustained accuracy and longer trouble-free meter life.

ROCKWELL MANUFACTURING COMPANY

PITTSBURGH 8, PA. Atlanta Boston Charlotte Chicago Dallas Denver Houston Los Angeles Midland, Tex. New Orleans New York N. Kansas City Philadelphia Pittsburgh San Francisco Seattle Shreveport Tulsa
In Canada: Rockwell Manufacturing Company of Canada, Ltd., Toronto, Ontario

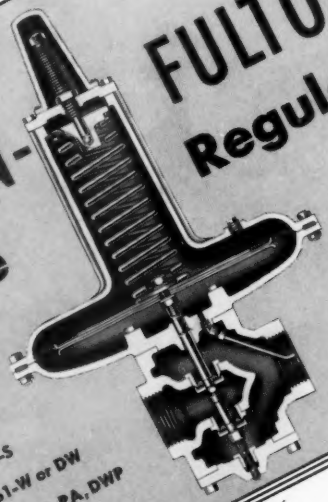
ROCKWELL *Aluminum* METERS

Just the ticket for those INDUSTRIAL and COMMERCIAL jobs!

MODEL 461

Screwed end 1½"-2"
Flanged 125 lb.
Max. Inlet Pressure 125 psi
Outlet Pressure Range
12" diaphragm ounces to 5 psi
8½" diaphragm 3 to 10 psi
Typical Flow Rate
5 psi inlet 12000 CFH
20 psi inlet 25000 CFH
50 psi inlet 48000 CFH

CHAPLIN-FULTON Pressure Regulator



Spring Loaded
Weight Loaded
Pilot Loaded

Model 461-S
Model 461-W or DW
Model 461-PG, PA, DWP

ACCURATE! VERSATILE! FOOLPROOF!

A compact self-contained economical regulator designed to satisfy 90% of your commercial and light industrial regulator requirements.

For distribution use, it steps up the pressure as the demand increases to deliver gas when you need it.

For safe accurate regulation of large volume commercial or industrial services, use Model 461 as a monitor regulator with Model '1100' as the control regulator. Most of the parts interchange. Both are compact, accurate and versatile.

Bulletin 461 gives complete information.

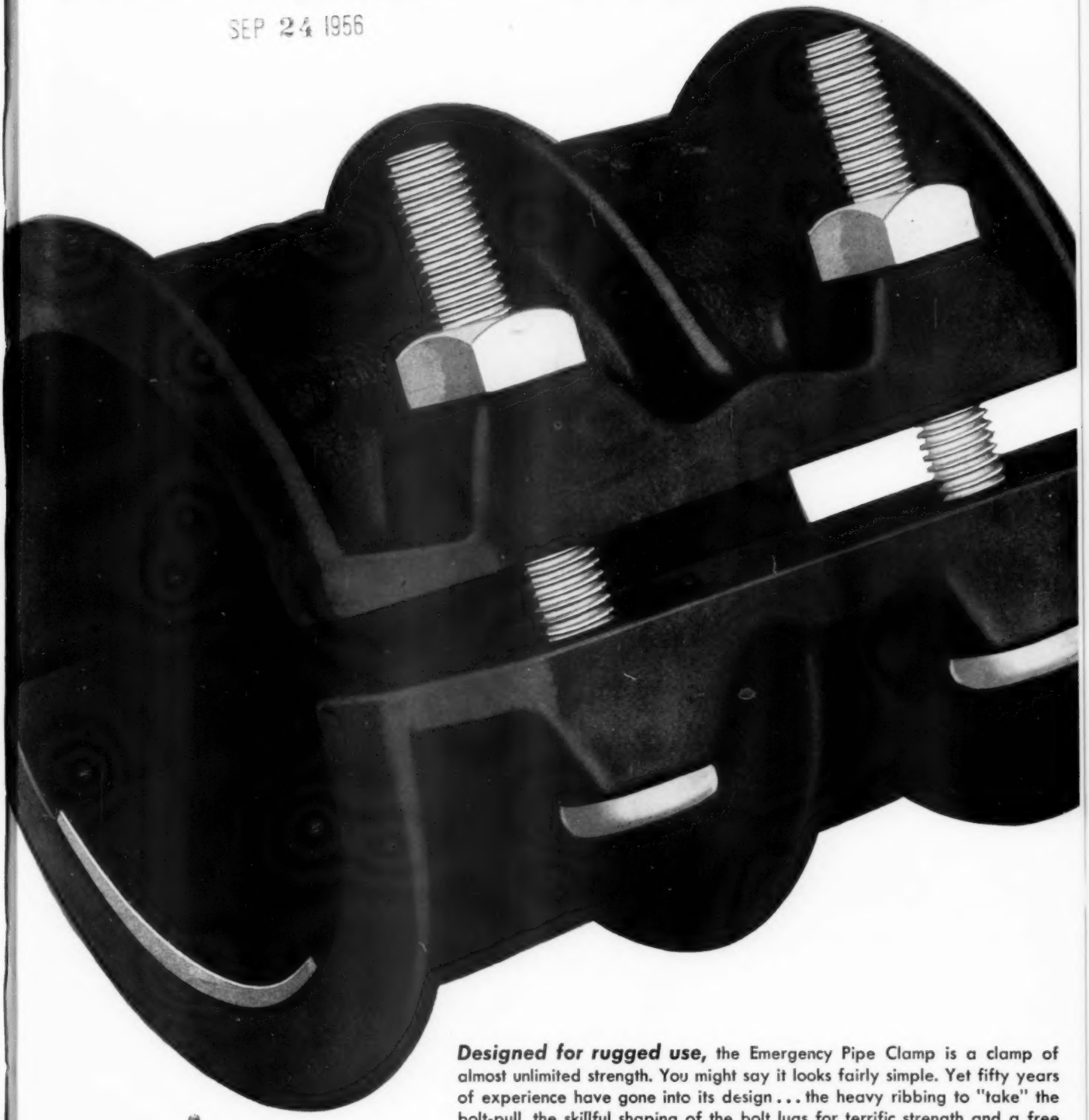
ACCURATE CP MFG CO DEPENDABLE

Chaplin-Fulton
MANUFACTURING COMPANY
Pittsburgh 35, Pennsylvania

461-1-56

THE CLAMP WITH GUTS!

SEP 24 1956

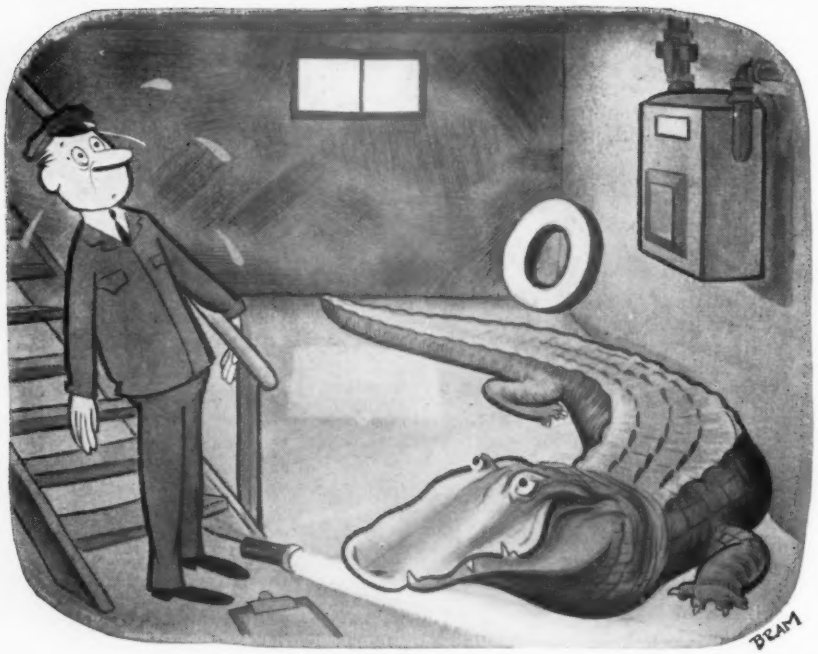


Designed for rugged use, the Emergency Pipe Clamp is a clamp of almost unlimited strength. You might say it looks fairly simple. Yet fifty years of experience have gone into its design . . . the heavy ribbing to "take" the bolt-pull, the skillful shaping of the bolt lugs for terrific strength and a free wrench swing. The full length, massive hinge which no strain can loosen! The over-thickness of metal throughout to make child's play of any pressure! The glove-like fit . . . result of shaping each clamp over an accurate mandrel, pulling it down with a 12,000 pound air vice and sledging to complete snugness.

When you put on the Emergency Pipe Clamp, it is there to stay. Tens of thousands of them are still in place after 20, 30, 40 years' service. Made in C.I. and steel pipe sizes—½" to 12" inclusive.

Write for Catalog GW
M.B. SKINNER CO., South Bend 21, Ind.

SKINNER-SEAL EMERGENCY PIPE CLAMP



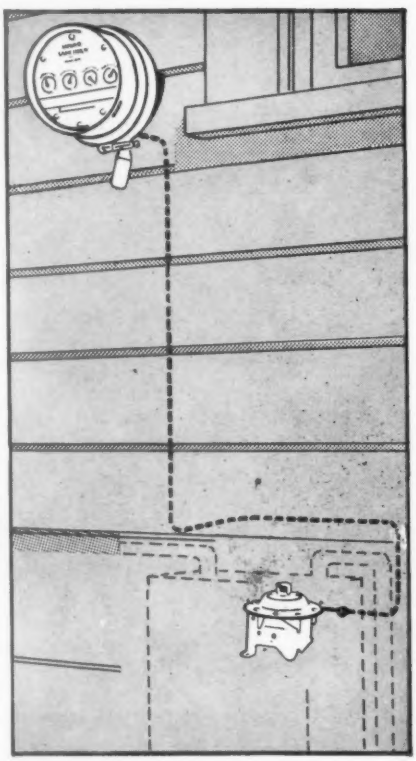
There's nothing like a tender, toothsome meterman to keep an alligator on his toes.

Gives him that body tone . . . puts more whip in his tail. In fact, independent surveys show that four out of every five domestically-housed alligators prefer meter readers over any other kind of snack including wild duck, stewed prunes and small children under five years old.

If your meter readers still have to go down into dark, unfamiliar cellars where there are always lots of surprises, you might pass the word along. Especially since, oddly, most health and accident policies don't cover this kind of a demise.

Of course, what you could do is arrange to have your meter readers get the reading outdoors. And you can do this by installing Sangamo Gas Telemeters on your present tin meters . . . brings the reading right outside the house. Be a lot of disappointed alligators—but then you can't please everybody nowadays.

We wrote everything down we thought you'd like to know about Telemeters and had it published under the title, "Outdoor meter reading is here . . ." or Bulletin 802. We've reserved a copy for you, so write for it today.



it's easier to get the reading ON THE OUTSIDE!

SANGAMO ELECTRIC COMPANY

SPRINGFIELD, ILLINOIS

GT56-2

memo: from the publisher

Lamplighting

We had the pleasure to receive from the New York Gas-Light Company, at the hands of its President, Wm. W. Fox, Esq., the FIRST APPLICATION for subscription to the Journal. It was the more gratifying, because it had been intimated that that company especially, and perhaps the Manhattan, would look with disfavor upon any movement calculated to throw light on what has been considered hitherto a dark monopoly. But it was quite the reverse in both causes; for immediately on mentioning to Mr. Fox our desire for information, he gave it most cheerfully, and promised any further particular that we might want, expressing, at the same time, his high appreciation of the importance of such a paper to the gas-light interest throughout the country.

That paragraph was written almost 100 years ago by the first publisher of the JOURNAL. So, you see, the top men of the early days already appreciated the value of communication.

Today we know full well that the element which raises progress to the Nth power is exchange of information —exchange of thinking, of action.

The first gas company was compelled to use trial-and-error methods. There was nothing to go by, nobody to consult. It is no wonder men advanced cautiously on this dark path. As the number of companies increased, experiment could be spread among more companies and news of results communicated by letter or at meetings.

The expansion of gas service throughout the nation called for an easier and quicker method of communication—one that reached all companies so that all might share and lighten the responsibilities of industry problems and exchange the knowledge that smooths the way to more efficient and better service.

You'll find one sample of what we mean in the issue — the exchange of ideas on gas range merchandising. Like Mr. Fox of a century ago, a good number of executives spent time and energy communicating their best campaigns so that others in our industry may profit by the plans and operation of their tested promotions.

In this way, the JOURNAL since the days of the New York Gas Light Company, has served our industry — multiplying your information and deepening your understanding.

Joe B. Hoda

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NINETY-EIGHTH YEAR

AMERICAN Gas Journal

GAS TECHNOLOGY — OPERATIONS — EQUIPMENT — MANAGEMENT — UTILIZATION

VOLUME 183 SEPTEMBER, 1956 NUMBER 9

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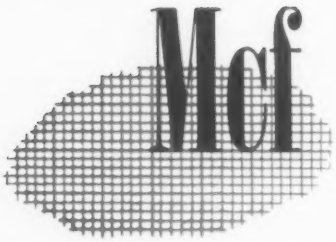

Natural gas is flowing through the Pacific Northwest Pipeline Corporation's new system, and first deliveries to residential customers have been made to residents of Monticello, Utah. Initial deliveries are scheduled for early September to the area including Portland, Oregon, and by the end of October, gas will be available in Tacoma and Seattle, Washington. During its first year of operation, PNWPL expects to deliver nearly 400,000,000 cu ft per day maximum, boosting it to nearly 700,000,000 cu ft the following year, when Westcoast Transmission's line is completed. Capacity by 1958 is expected to be 800,000,000 cu ft daily.

Construction of the first 574-mile segment of Trans-Canada pipe line has bogged down because of a steel shortage. First pipe of an order for $40,000,000 was delivered in June and construction began on the Winnipeg leg in July. Some 125 miles of pipe was stockpiled or en route when the recent steel strike began. Deliveries have fallen behind, and Trans-Canada is uncertain whether or not it will be able to meet its deadline to deliver gas to Winnipeg by December 31, 1956.

Remedial legislation within the framework of present FPC operations that would exempt small independent gas producers, protect consumers, and not use cost as an exclusive basis for gas rates was suggested in addresses by top legal men at the 79th Annual meeting of the American Bar Association in Dallas in late August. At both the section meetings on Public Utility Law and Mineral Law, the same trend of thought prevailed.

Twelve Idaho cooperatives have applied to the FPC for permission to build and operate distribution facilities in their state, and have asked that the FPC order Pacific Northwest Pipeline supply them with natural gas. Fifth year peak day requirements of the 12 utilities are estimated at a total of over 42,000,000 cu ft. Estimated cost of the facilities to be built by the 12 co-op's is approximately $8,750,000. All 12 would be non-profit, privately owned cooperative associations.

Three eastern Arkansas municipalities, which plan to build their own distribution systems, have asked the Arkansas PSC for permission to serve surrounding rural areas. The state PSC does not have jurisdiction over municipally-owned systems, but does have authority over rates and service outside city limits. The three cities — Clarendon, Marvell, and Holly Grove — are building their own transmission line from a connection with Texas Gas Transmission Corporation's line south of Helena.

Lower rates for most natural gas service customers would result from a new rate schedule submitted by Niagara Mohawk Power Corporation to the New York PSC. An over-all reduction of $663,825 per year would be provided by the new schedule. Some customers — mostly families using small quantities of gas — would be in for increases, up to $1.50 per year. Commercial users would benefit most from the new schedule.

North Carolina's State Utilities Commission has set an October 9 hearing date for an order directing North Carolina Gas Corporation to explain why it hasn't provided natural gas service in and around the Thomasville area. Thomasville is in the company's franchise area and within 10 miles of the Transcontinental Gas Pipe Line, which supplies North Carolina Gas.

A $1,140,906 natural gas gathering tax refund will be paid by the State of Texas to Tennessee Gas Transmission Company, but the company will have to wait for the state legislature to appropriate the money for it. The Texas Supreme Court ruled in July that the tax, paid without protest by TGT, be returned. The U. S. Supreme Court had earlier ruled the 1951 Texas law to be unconstitutional. Another $25,000,000 paid under protest has been returned.

Independent producers are keeping an eye on an application by another independent, P. R. Rutherford, et al, to the FPC asking permission to abandon sales being made to United Gas Pipe Line Company. Rutherford has a 10-year contract with United, made in 1946, which provides that after the initial 10-year period, the contract could be renewed for one year periods, but could be terminated upon 90 days notice by either party. Rutherford in 1951 agreed to deliver his gas production to two intrastate companies upon termination of the 10-year United contract. The United contract was to expire on August 15, 1956. Action by the FPC may be a bellwether — as to whether, under federal regulation, contract agreements are worth the paper they are written upon.

In Connecticut, state public utilities commission engineers plan to complete during the winter months an inspection of all gas transmission company pipe lines in the state. Two firms serve the state — Tennessee Gas Transmission Company and Algonquin Gas Transmission Company. The PUC engineers have completed inspection of a section of TGT's line, and found 40 road crossings over lines where the pipe line was not deep enough to meet state regulations. Twelve of these crossings have been corrected at a cost of about $14,000 each. PUC engineers also found that new buildings have been built closer than 40 feet from the pipe lines — minimum distance allowed. City officials in the various cities affected are cooperating to prevent future cases of construction too near the lines. Both gas transmission companies have agreed to conform to PUC rules and regulations, the commission noted.

Nation's pipe line network continues to grow, the FPC notes in a report on authorizations for the year ended June 30, 1956. New facilities authorized in the 12-month period include nearly 4400 miles of pipe lines, 255,000 in compressor horsepower, which will cost an estimated $461,400,000 and add more than 2.25-billion cu ft daily capacity to the individual systems. Major projects (costing $700,000 or more) accounted for most of the estimated cost and facilities, and will benefit some 170 cities of 50,000 population or over in 31 states and the District of Columbia, as well as numerous smaller communities.

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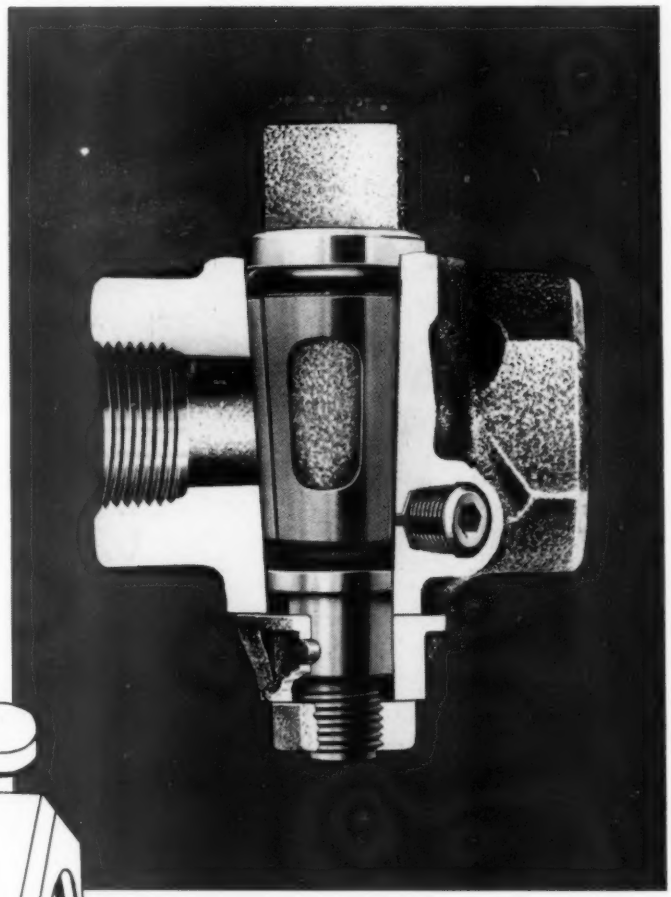

Plain head or lock wing
Sizes ¾" through 2½"

NO-BLO®

Ask your Mueller Representative about this and other safety features of the Mueller Lub-O-Seal before you make future installations. Or write direct.

Permanently easy turning

Install the Mueller Lub-O-Seal gas stop with the knowledge that it will always remain operable, regardless of long periods of disuse.

Grease plug, in independent port in body, forces lubricant into annular grooves at top and bottom of key where it is stored under pressure by compression of "O" rings. "O" rings tendency to regain original shape forces lubricant through vertical grooves in key. Each time stop is operated a uniform film of grease is spread over the seating surfaces.

Grease port has ground and lapped surface between it and the gasway, preventing leakage even with plug removed. The Lub-O-Seal is quickly and easily relubricated, restoring original ease of turning.

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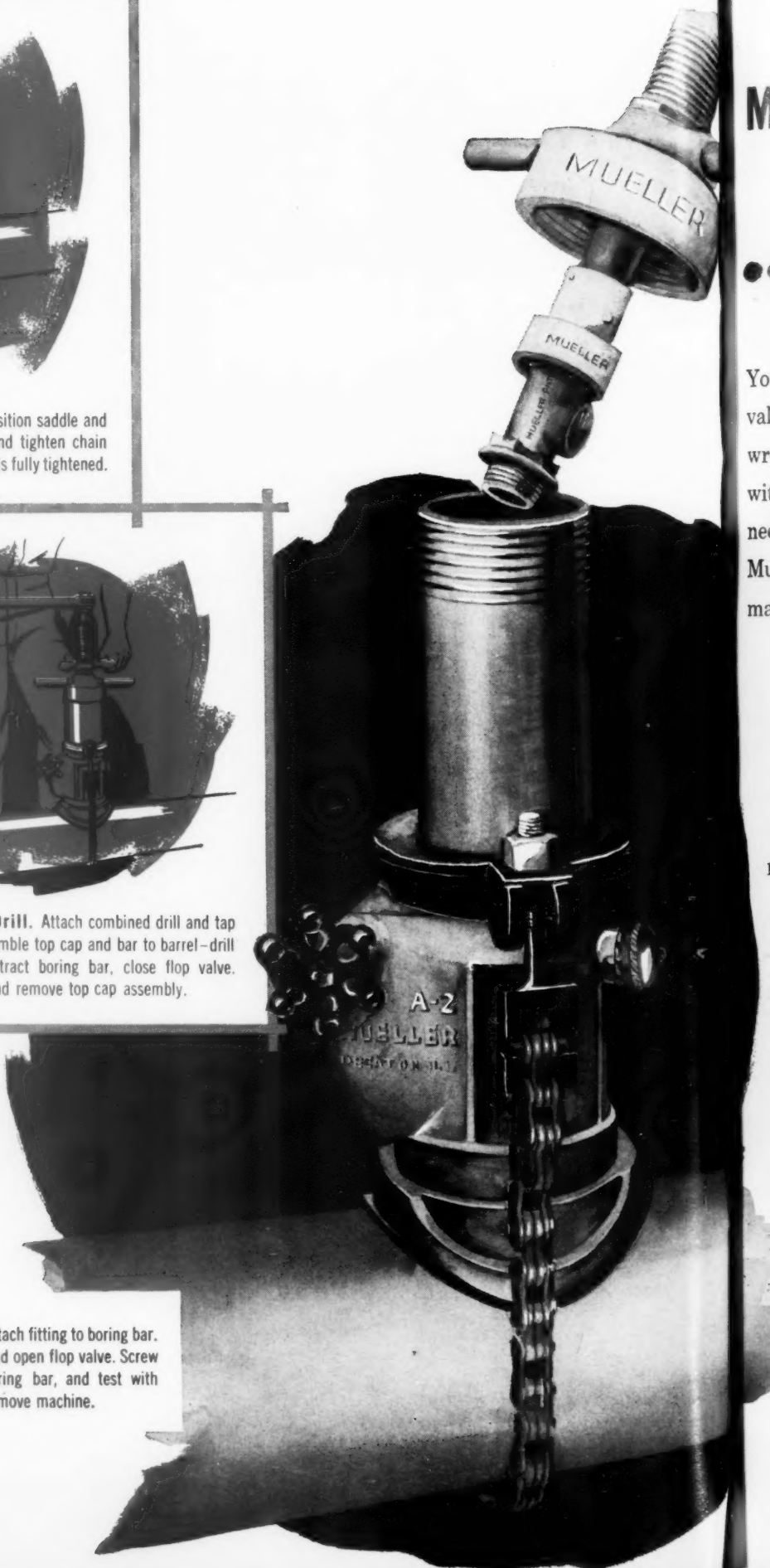
Dependable Since 1857

MAIN OFFICE & FACTORY DECATUR, ILLINOIS

STEP 1: Attach. Clean main – position saddle and gaskets. Mount machine body on saddle and tighten chain around main. Be sure chain is not kinked and is fully tightened.

STEP 2: Drill. Attach combined drill and tap to boring bar–assemble top cap and bar to barrel–drill and tap main. Retract boring bar, close flop valve. Relieve pressure and remove top cap assembly.



STEP 3: Insert. Attach fitting to boring bar. Remount, equalize pressure and open flop valve. Screw fitting into main. Raise boring bar, and test with bleeder valve for leakage. Remove machine.

Make service connections under pressure...

...without welding!

You can install Mueller threaded service tees, valve tees and gas main stops into steel and wrought or cast iron mains under pressure—without escape of gas. Safe, permanent connection is made quickly, without welding. Mueller "A-2" or "B" machine drills and taps main and inserts the fitting. Rugged in design and construction, these drilling and tapping machines may be used on pressures to 90 p.s.i., with power clevis to 230 p.s.i. The "B" machine handles gas stops through 1", ¾" valve tees and pipe plugs through 2½". The "A-2" is used on gas main stops and service tees through 2", 1" and 1¼" valve tees and pipe plugs through 4".

MUELLER® NO-BLO® Method

Write for the No-Blo® Method booklet, "Safe Operating Practice." It shows how other gas installations are made in a safe manner, without escape of gas.

STEP 5: Complete. Connect service piping to fitting. Open stop or valve in tee to activate service. Screw completion cap onto valve tee to complete installation.

STEP 4: Tighten. Tighten fitting in main with wrench. (If using machine inserted valve tee, tighten down copper encased neoprene compression nut at bottom of tee after cleaning off chips.)

MUELLER CO.

Dependable Since 1857

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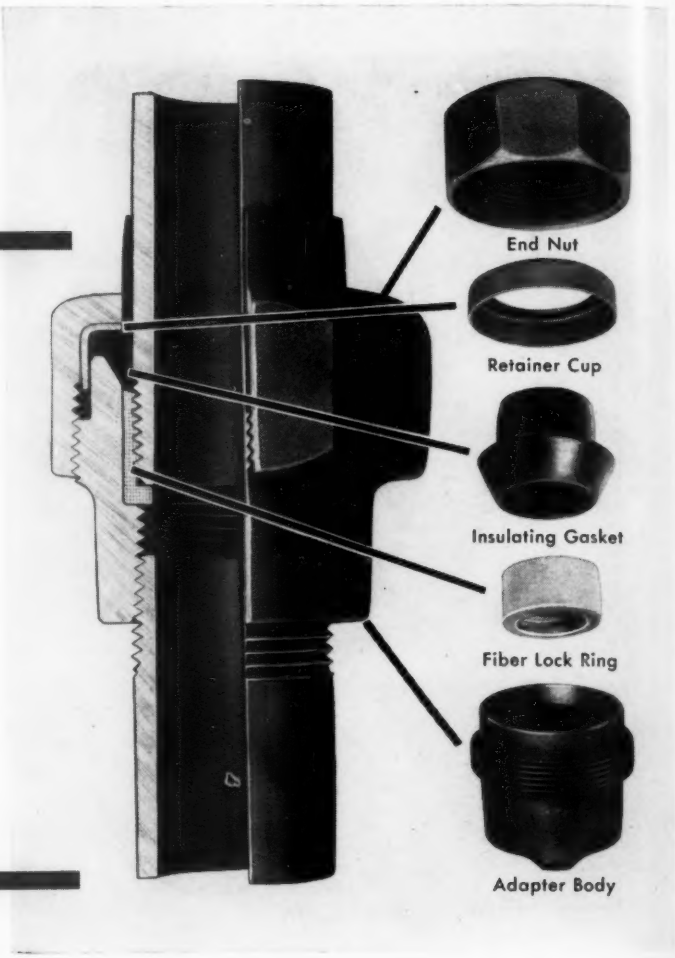
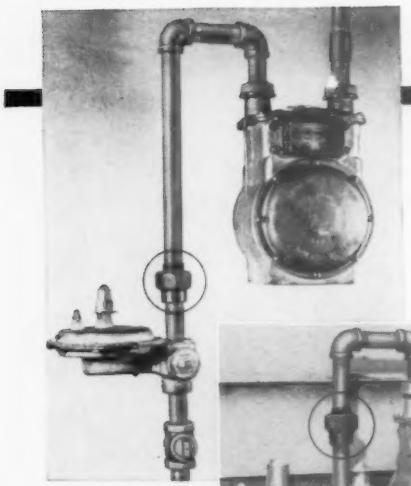
INSULOK

ADAPTER

seals gastight,
resists pull-out,
blocks current flow!





Since its introduction, the Dresser Style 90 Insulok* Adapter has become accepted throughout the gas industry for setting meters and regulators—inside the basement and out!

Installation is fast, foolproof, trouble-free. Positive sealing is maintained by the rubber gasket *built in.* To meet the unusual strains of basement hookups, the fitting design provides extra safety and resistance to pull-out. Rigidity for good meter settings is assured. Damaging currents between main and house are blocked effectively.

Insulok fittings are available for a variety of applications, in ¾″, 1″, and 1¼″ sizes, in both male and female types. Wrench-installed like all other Dresser products, they go on quickly and easily, provide swift entrance into lines for servicing of meters and regulators, assure leakproof performance for life. Your Dresser Sales Engineer will give you full details.

*Insulok is a registered trade-mark.

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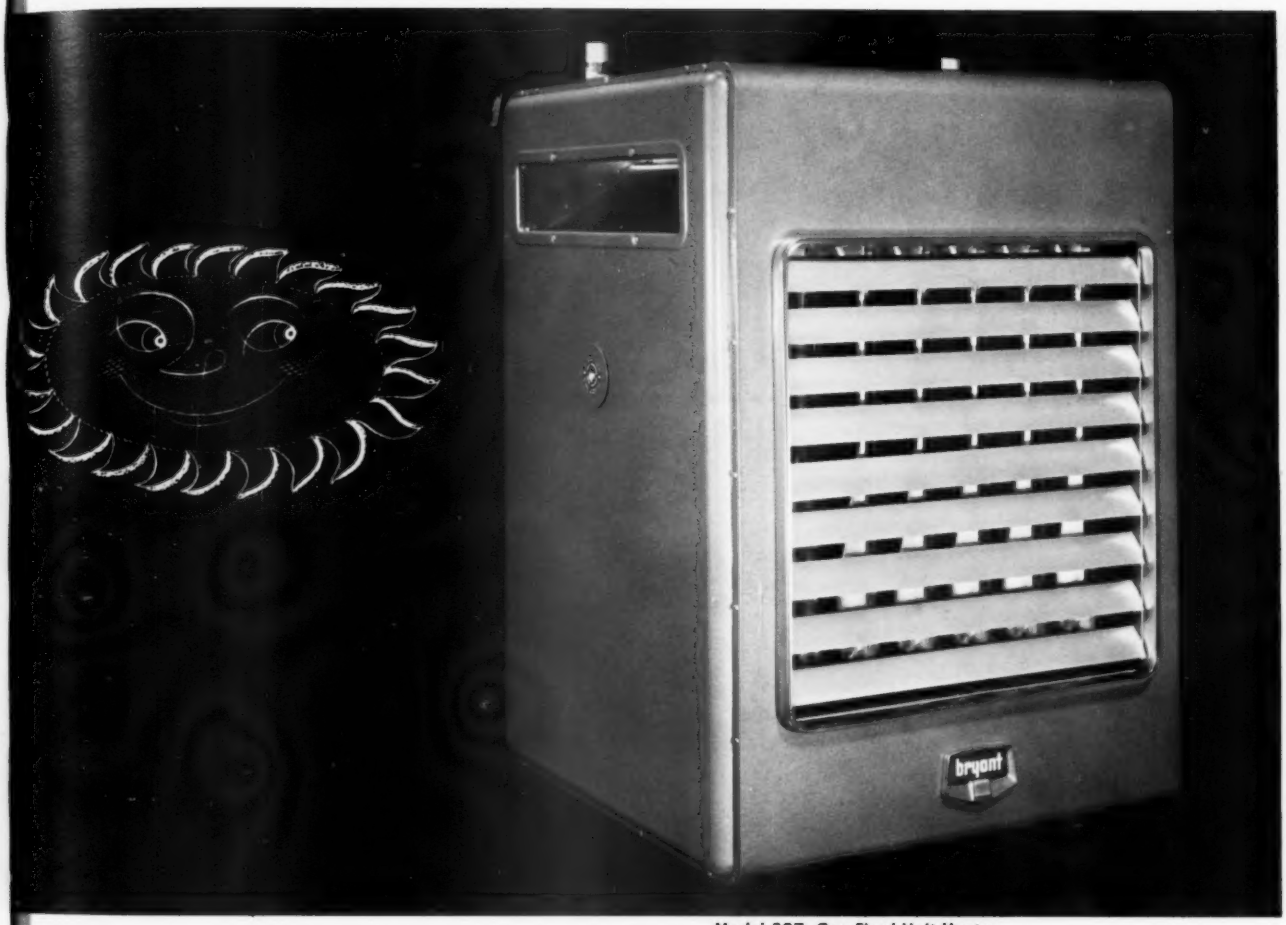

Model 327, Gas-Fired Unit Heater

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WILL...

help you find more **PROSPECTS**

help you make more **SALES**

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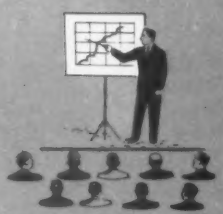
2 bryant ADVERTISING and SALES PROMOTION HELPS

complete newspaper ad mats for all products. Excellent displays. Direct-mail programs. Complete promotion packages. Everything to help you promote *locally* in your city.

3 bryant SALES and SERVICE CLINICS

Field and factory-trained crews, with years of practical experience, hold sales and service clinics in or near your own city to help you sell and service better.



4 bryant BUDGET PLAN

Gives you the best credit facilities available with these customer inducements: no money down, low monthly payments, 3 full years to pay and many others.

THE 8 BIG reasons why you should be a BRYANT DEALER:

1. Bryant — a *name* that sells — famous for 48 years as *the* leader in home comfort equipment.
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3. *Highest quality* heating, cooling and water heating equipment made.
4. Bryant BUSINESS DEVELOPMENT PROGRAM.
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6. *Nearby distributor* for engineering, sales and service help.
7. *National advertising* that sells YOU!
8. *Co-op advertising* that builds sales locally.

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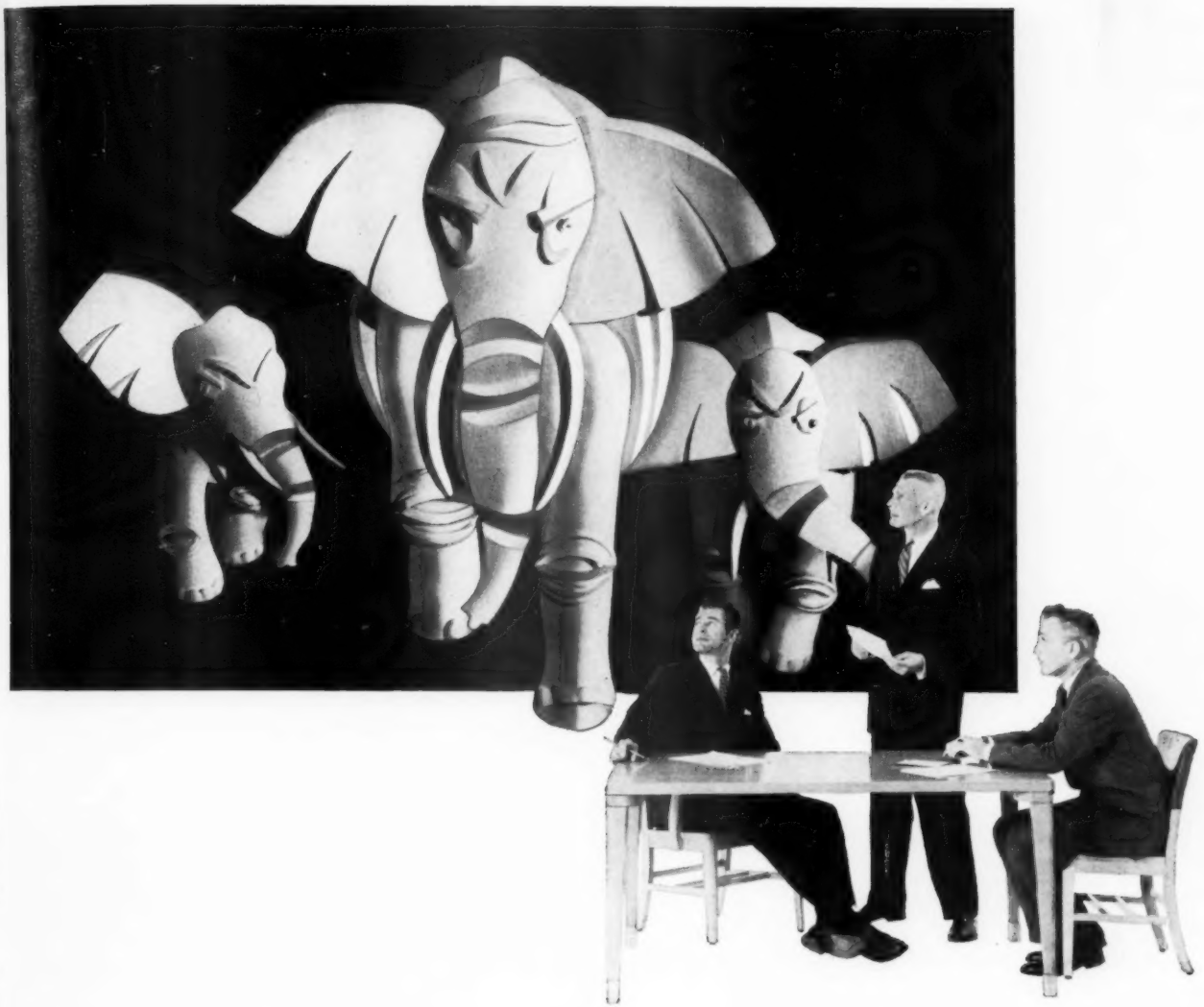

these white elephants are made of paper!

Are you feeding them in your office? Most offices are! They're that mass of ever-accumulating records that bulk up files, eat up space, and gobble up big hunks of profit!

If you have any doubt about these beasts stalking your office – try these three simple tests:

TEST #1 – Do you have an organized policy covering systematic retention, transfer or destruction of all papers and documents? If not, you must be feeding a white elephant! Tremendous savings are possible. Assuming you have 50 files, annual savings of $3850* will result from the 35% of the records to be destroyed . . . 100 files double this amount, and so on. And savings from "destruction" are only a drop in the bucket!

TEST #2 – How long does it take to find or file a paper in your organization? It should not take longer than 1 minute. If it does, your company probably needs a Records Analysis.

TEST #3 – When you ask for a file by *subject* instead of by name do you get all the records pertaining to that subject – and are they in order for best use? A subject file is the backbone of a record-keeping operation—the source of vital facts for management decisions. *Untold dollars* ride on those decisions!

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- ☐ LBV676 –"Kompakt – The File With The Extra Drawer"
- ☐ BSD-5B –"Complete Microfilming Service"
- ☐ SC707B –"The Cost Of Burned Records"

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4 INCH SIZE

VENT DIAMETER, INCHES	LENGTH OF LATERAL, FEET	Total Height of Vent (in feet) from Draft Hood to Top								
		4	6	8	10	15	20	30	40	50
		Allowable Span of Vent Operation, Expressed as Rated Hourly Heat Input (1000 BTU Per Hour) of Gas Appliance Being Vented.								
4 INCH SIZE	0 (No lateral)	6 to 80	7 to 86	8 to 95	11 to 102	14 to 115	18 to 120	33 to 131	46 to 137	61 to 140
	2	6 to 57	8 to 67	11 to 75	12 to 81	16 to [illegible]	[illegible]	35 to 115	52 to 127	66 to 128
	5	7 to 55	11 to 64	13 to 71	16 to 78	[illegible]	27 to 100	41 to 113	55 to 120	77 to 123
	10	10 to [illegible]	[illegible] to [illegible]	19 to 66	22 to 74	27 to 85	36 to 95	50 to 108	65 to 115	80 to 120
	15	[illegible]	[illegible]	29 to [illegible]	31 to 69	35 to 81	44 to 90	59 to 102	72 to 110	94 to 115
	20	[illegible]	[illegible]	39 to 60	41 to 65	45 to 77	50 to 85	72 to 99	83 to 108	105 to 112
	25	[illegible]	[illegible]	48 to 56	50 to 62	55 to 73	60 to 79	79 to 95	S and C	S and C
	30	S and C	S and C	S and C	S and C	S and C	S and C	S and C	S and C	S and C

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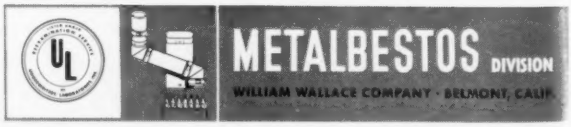

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FUEL FOR THOUGHT

Little Black Sambo and The Three Tigers

About Our Guest Editor: Our Guest Editor this month is R. R. "Bob" Suttle, the genial, hardworking managing director of the Southern Gas Association. Bob, who has guided the SGA's activities from its Dallas headquarters for the past decade, is highly esteemed by the industry he serves for his keen analysis of current problems. This month's guest editorial has been developed from a talk that he presented to registrants at the 11th Annual Short Course in Gas Technology at Texas A & I College, an annual industry educational program sponsored by SGA.

Every person who works anywhere in any department of any company handling natural gas at any of its stages, from wellhead to burner tip — has one big, common goal. That goal is to secure for ourselves a part of the dollar that the ultimate consumer pays for his or her natural gas service. This common bond should be strong enough to weld our industry together into a solid front.

Instead of concentrating our efforts on knocking the daylights out of our competition, what has the gas industry been doing? We've been squabbling among ourselves over prices, over legislation, using our talents and our energy to gain for ourselves a little more favorable position than some of our own teammates.

You may remember the story of Little Black Sambo and The Three Tigers. Each tiger was a pretty powerful personality on his own. Together, the three tigers could have licked anything in the jungle. But, they got to wrangling among themselves and look where they wound up — in the soup.

We don't want to find our three segments of the gas industry in a similar situation, while our competition, in the role of Little Black Sambo, better known as Reddy Kilowatt, sits back and watches the fun.

Sometimes I think we are closer to that point than we realize. Today the three segments of our industry are disorganized. They are uncooperative in our battle against our competition.

Look at the producers and distributors — scrapping over regulatory legislation. The president of the American Gas Association, Dean H. Mitchell, made an observation at the recent SGA convention that sums it up. Mr. Mitchell said: "To me, the tragedy was not the passage or lack of passage of the Harris-Fulbright Bill, however much it may have been needed. The tragedy was the display and existence of a divided industry."

Like Mr. Mitchell, I believe that out of our soundest thinking there must be found a way to unity.

Every industry has public relations — perhaps you'd rather call it public acceptance — whether it wants it or not. The industry can choose only whether it's to be good or bad.

Have we chosen the bad? Look at our gas industry — unintegrated, losing some of its acceptance by the consuming public, handicapped by inadequate promotional funds, unsupported by large segments of the industry — all this while we face the stiffest competition in our history, against an opponent who is expanding, who is making progress, who has much more money than we have to spend on promotion — and who, above all, has unity of purpose and action to give himself added impetus.

Many leaders in our industry have given constructive thought to plans for cooperative action. Jake L. Hamon, chairman of the American Petroleum Institute, tells his oil people they must learn the problems of other segments of the petroleum industry and do everything possible to improve their public relations.

Even the government recognizes how badly we are disunited. Jerome K. Kuykendall, chairman of the Federal Power Commission, tells us that any future proposed legislation relating to the gas industry — production or otherwise — must take into consideration the problems of all segments of the industry.

AGA tells us that we all need to join in and increase our sales and promotion efforts. And, I'm happy to say something is being done about this. In the mill is a plan for the natural gas industry to sponsor one of the top-rated television shows next season. Here is a real chance for everybody to get in the act.

Let me give you some figures parenthetically in here. By most standards, the electric industry, nationally, is about twice as big as the gas industry — twice as many customers, twice as much investment, twice as much being spent on expansion. Following this on out to a conclusion, it would seem that the electric industry would have about twice as many promotion dollars as we do. But, in a recent seven-year period, the total national advertising for electric ranges, water heaters, clothes dryers and refrigerators totaled about $96,000,000. Our expenditure for advertising the same appliances run by gas totaled $16,000,000 — a ratio of six to one.

Any wonder that we're lagging behind?

I believe you would be surprised at the substantial number of people in the various segments of the gas industry who have succumbed to electric advertising and are now cooking electrically. We are up against stiff competition for the water heating load; and on the horizon, there is a new device that keeps moving closer and closer and gets bigger and bigger, competitively speaking, the electric heat pump.

You in production and transmission can't get excited about losing a few gas ranges to the electric utilities. After all, it doesn't amount to too many thousands of cubic feet per range.

But when our competition starts gaining heating customers, then we will be hit, and hit hard. That amounts to considerable MCF, and the figures could be impressive enough to cause concern among transmission and production people who customarily deal in large quantities of gas.

Our trouble is the diminishing importance that the ultimate consumer takes on, the farther away he is. The distributors, who meet this consumer face to face on the sales floor, are impressed with his value. But, I have the feeling that the transmission people and the producers are looking at him through the wrong end of the telescope. He just seems too insignificant to worry about.

This same feeling goes right on out to the people who are dependent on our industry. The manufacturers of our production plant — steel casing, drilling equipment, and contractors — show no interest in our competitive problems. The manufacturers of our transmission equipment — pumps and compressors, gas treatment plants, and steel pipe lines — contribute little to our industry promotion efforts. The makers of our distribution devices — meters, regulators, steel pipe — except a few — don't seem concerned about our fight.

It is their fight too, to sell America on the value of cooking and heating and cooling and manufacturing with gas.

Our trouble may stem from the fact that for a long period of years we were too successful. Competition was almost nonexistent and we in the industry took our well-being for granted. It seemed that all we had to do to round up customers was to stick our heads into a town and shout "Come and get it!"

Now, every use to which gas is put can be matched by our competition. I didn't say equaled, I said matched. Even our house-heating load can no longer be taken for granted. Without a doubt, we face the stiffest competitive fight we have ever known.

We're not puny weaklings. Don't get that idea. The natural gas industry is the sixth largest industry in the United States, with a total capital investment of more than $13 billion. We're adding customers at the rate of 1,000,000 a year to the 27,000,000 on our lines.

That's a powerful force, once it's marshaled to work and fight like a team.

If we could all agree on a national sales promotional program to which all segments of the industry could contribute — if we can all agree on a unified legislative program to present to the next Congress — we as an industry would be certain of making progress.

With everyone's help, we can rewrite that nursery tale. Let's let the tigers get together and, for once, outsmart Reddy Kilowatt!

Taking part in completion ceremonies were, left to right, Charles H. Gueffroy, president, Portland Gas & Coke Company; Harold Massey, managing director, GAMA; Ray C. Fish, chairman of Pacific Northwest Pipeline Corporation; C. S. Stackpole, managing director, AGA; Mrs. America (Cleo Maletis of Portland); Howard Pyle, deputy assistant to President Eisenhower; and Governor Elmo Smith of Oregon.

Jerome K. Kuykendall, chairman of the Federal Power Commission, was one of speakers at natural gas pipe line completion ceremony in Portland. Others in picture, from left, are Ray C. Fish, chairman, Pacific Northwest; President Charles H. Gueffroy of Portland Gas; R. D. Ricketts, president of Fish Northwest Constructors, Inc.; Douglas McKay, former Secretary of the Interior and ex-governor of Oregon; Howard Pyle, assistant to President Eisenhower; and Governor Smith of Oregon.

Portland Celebration Marks Beginning Of Natural Gas Era for Northwestern States

AMERICA'S natural gas industry has opened a new era for another great region — the last to receive the wonder fuel — the three states of the Pacific Northwest.

Builders of the 1487-mile pipe line from southern Colorado and the largest distributing utility in the Northwest celebrated the joining of their two systems at Portland, August 16.

At a metering and gate station on Sauvies Island in the Columbia River, the Pacific Northwest Pipeline Corporation and Portland Gas & Coke company lowered the final L-pipe amid speeches and fanfare.

Ray C. Fish, PNW's board chairman and father of the lengthy project, placed one of the final bolts. Charles H. Gueffroy, head of PG&C, pushed home another.

The two systems stood ready to transport natural gas from San Juan basin wells some 1240 miles to Sauvies Island and thence through 2600 miles of distributing mains to some 80,000 customers in Portland and 82 nearby communities.

Natural gas is scheduled to flow in the first two weeks of September, as soon as testing is completed in the "Scenic Inch," said Richard D. Ricketts, president of Fish Northwest Constructors, who bosses the big project.

Four-fifths of the 2571 miles of main line, laterals and gathering system has been built in less than 14 months, he told the crowd. Only part of the main line of the $204,000,000 project not yet completed is in the Seattle area.

Flags of the United States and Canada, and of the seven states where the new pipe line runs, framed the rural setting for the ceremony. The Northwest by the end of 1957 will have gas supplies from two distant sources.

Pacific's line soon will deliver up to 345,000,000 cu ft per day from its own fields and from fields now being developed in Colorado, Utah, and Wyoming, such as the Big Piney that started supplying gas a week before the Portland affair.

In Canada, Westcoast Transmission Company is pushing work on a 30-in. line from the Peace River area to the border, where it will deliver 300,000,000 cu ft per day in late 1957 to Pacific. The combined flow of gas will equal in thermal energy that of all the hydroelectric projects in the region.

Together, the systems will exceed $400,000,000 in cost. "Think of it," declared the chief speaker, Howard Pyle, deputy assistant to President Eisenhower and ex-governor of Arizona. "A $400,000,000 natural gas pipe line with not one dollar of government money in a single inch of it."

Jerome K. Kuykendall, chairman of the Federal Power Commission, lauded the two-nation plan for "a most unique and excellent condition, with gas available from both ends of the line."

Fish termed natural gas "a powerful new stimulus to the Northwest's economy, providing a third essential to its two present special advantages of large quantities of fresh water and electricity."

Stuart F. Silloway, making his debut as new PNW president, said the continuing discoveries of gas in the Southwest and Rocky Mountains have led his company to prepare applications for expanding its transporting facilities to handle 850,000,000 cu ft a day by the end of 1958, compared to the original 300,000,000.

After officials placed the final bolts, a 15-ft symbolic flare was lit by Mrs. America, who is Portland's Cleo Maletis. Master of ceremonies was Robert R. Herring, a Pacific director and president of Fish Service & Management Corporation, Houston.

More than 100 invited government, industry and finance officials from across the nation were in the crowd.

Gas appliance dealers on the previous night heard two top American Gas Association men, President Dean Mitchell and Managing Director Chester S. Stackpole.

Househeating Pilot Problems

AGA Customer Service Committee survey reveals that pilot burners provide most of the serious service problems; year-round operation becoming more popular

J. H. Dennis, *Long Island Lighting Company, Mineola, New York*

IN the late 1940's, many gas companies felt the first surge of the present gas househeating boom.

No real problem in providing adequate service to these newcomers existed while the percentage of househeating customers was below 5 per cent or 6 per cent.

When the percentage of saturation began to rise above this point, however, a real problem arose during peak service periods such as the fall turn-on season.

Such a peak over so short a period of the year created a manpower demand that could not be met while still keeping the organization well balanced for the rest of the year.

A great many companies began to look for ways and means of coping with this situation. Some started offering complete househeating cleaning services to the heating customers in order to absorb the manpower during the summer months while others began to recommend year-round pilot operation in househeating equipment.

It was at this time that the Philadelphia story was printed, pointing out how the Philadelphia Gas Works Division had reduced their fall turn-on requests as well as their service problems by recommending summer pilot operation. Since that time, many companies have publicized the idea of leaving househeating pilots on during the summer months.

Today's Househeating Pilot Problems

Now, after seven or eight years of experience with summer househeating pilots and with the saturation of househeating customers increasing more rapidly than before, some of us are wondering what further can be done to solve the manpower problem.

The Customer Service Committee of AGA decided that points of interest to all could be accumulated by a survey and study of "Househeating Pilot Problems."

Fifteen companies were included in a survey recently made. These companies were situated throughout the country from the Eastern Seaboard, through the Middle West, and to the West Coast.

The number of househeating units by companies ranged from 27,000 to 1,144,500 and totaled 3,446,648, providing a fair sample from which to study pilot troubles.

This survey started with the idea of seeing what the summer pilots problems and benefits might be. The results, however, have yielded information on the year-round characteristics of pilots.

Facts Accumulated by Survey

Of the 15 companies reporting, 13 companies recommend that househeating pilots be left on during the summer months.

The following means of informing the customers of the advantages of summer pilots were used periodically by the sampled companies.

Method	*Number of Companies*
Mail only	5
Mail and newspaper	3
Mail and phone	2
Servicemen (verbal)	1
Phone and servicemen	1
Mail, phone, newspaper and servicemen	1
None	2

Only 10 companies reported and revealed that an average of 60 per cent of the customers now leave their pilots on year-round. Some of those companies have as high as 80 per cent of the househeat pilots on all year.

Five companies estimated that approximately 20 per cent of their househeating customers turn off their own pilots.

Eleven of the surveyed companies kept records or supplied estimates of the percentage of househeating customers now requesting fall turn-ons. The average of this data is a favorable low of 8.3 per cent.

One company reported that 17 per cent of the boilers where pilots were left off during the summer months needed section, combustion chamber, and burner cleaning, while only 2 per cent of those where pilots were left burning during the summer required this type of cleaning.

Pilot failures on those units left on during the summer averaged 6.7 per cent as reported by six companies. One company reported having made a recent survey of 3200 no-heat complaints in which it was found that 8.8 per cent of the pilots left on during the summer failed.

Pilot failure averaged 50 per cent of the service problems of one company, and 33.7 per cent of the total pilot com-

Survey of House Heating Pilot Problems

Here Are Answers Received from 15 Representative Companies

Company	1	2	3	4	5	6	7	8
Do you recommend pilots be left on during summer?	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
How is recommendation made?	Verbal by servicemen	1 bulletin mailed in spring	1 bulletin mailed in spring. 1 reminder in summer Phone	Bill encl. Notice by servicemen Printed & verbal	Personal Phone Servicemen	None	Bill encl Newspaper Telephone Servicemen	Mail 1 bulletin in spring
No. of househeating units on lines	213,000	160,000	48,500	148,000	276,500	1,144,500	27,000	563,525
No. of requests for turn-ons	2,092 (1%)	12,800 (8%)	7,700 (16%)	8,332 (6%)	24,600 (9%)	68,000 (6%)	****	****
% of pilots left on during summer	(60%)	*See below	(20%)	****	(70%)		(50%)	Survey (80%)
% of pilot failures of those left on	Tendency to increase failures	****	1954-55 survey of 3,200 jobs, 8.8%	****	Survey 0.29%	****	14%	****
% of pilot failures by type, bi-metal, thermo, etc.	*See below	****	Mech. 47. Therm. 20. Generator 1.7 Hydr. 23.7 Elec. 7.7	Therm. 68.1 Pil. Gen. 4.2 Merc. & liq. bulb 5.5 Bi-metal 20.4 Elec. 1.6	****	****	Bi-met. 56% Thermo. 44%	****
Cause of pilot failures by type	87% needed cleaning	****	*See below	*See below	*See below	****	Dirty orifice, air port	****
No. of pilots found on and not lighted	****	****	****	****	70,100 (29%)	****	****	****
No. of pilots found turned off by customer	****	****	****	****	****	****	****	****
No. of pilots found turned down	****	Total cleans 2,300	****	****	****	****	270 (2%)	****
% of househeating units needed cleaning where pilots were left on	****	No breakdown	****	****	****	****	2,300 (12%)	****
% of househeating units needed cleaning where pilots were turned off								
	*Bi-metal Installed 49% Failed—cold day 47.6% Failed—mild day 39.3% Therm. Installed 42% Failed—cold day 43.8% Failed—mild day 52.7%	*Turned on by company 8% Turned off by company 2%	*Air port obstruction Mechanical 47.6% Hydraulic 25.4% Thermocouple 18.4% Electronic 7.4% Pilot generator 1.2% Orifice obstruction Mechanical 46.4% Hydraulic 21.9% Thermocouple 21.5% Electronic 8.0% Pilot generator 2.2%	*Bi-metal Calibration 43% Position 2% Input 3% Foreign matter 19% Stuck 4% Loose 2% Burn, rust out 9% Open circuit 14% Broken 1% Misc. 3% Therm. Position 5% Foreign matter 10% Loose 27% Burn, rust out 13% Open circuit 26% Short circuit 8% Broken 2% Misc. 9%	*Flaking 21.5% Orifice 14.2% Air ports 49.3% Balance Adjustment Position Elec. Conn., etc.			

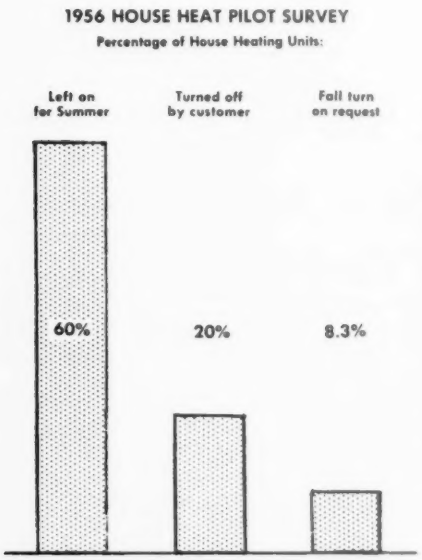
Company	9	10	11	12	13	14	15	Summary	
								Yes—12	No—2
Do you recommend pilots be left on during summer?	Yes	Yes	Yes	Yes	No	Yes	Yes		
How is recommendation made?	Mail & personal	Mail notices, Apr., May, Aug. Sept.	Spring bill encl., newspaper Cards at cashiers windows	Postcard	None	Postcard, May & June to new heat customers Newspaper	Bill encl., Apr. & July. Postcard, Sept.	Mail only 5 Mail & newspaper 3 Mail & phone 2 Servicemen 1	Phone & servicemen Mail, phone, paper, men None
No. of househeating units on lines	204,238	95,000	210,000	135,000	99%	67,385	154,000	27,000 to 1,144,500 Total 3,446,048	
No. of requests for turn-ons	20,500 (10%)	4,700 (5%)	2,000 (1%)	17,000 (13%)	(25%)	1,000 (1.5%)	11,800 (7%)	Ave. 8.3%	13 Record 2 No record
% of pilots left on during summer	(70-80%)	(26%)	****	(60%)	None	(75%)	(75%)	Ave. 60%	10 Record 5 No record
% of pilot failures of those left on	10%	3%	****	Negative	None left on	4%	****	Ave. 6.7%	6 Record 9 No record
% of pilot failures by type, bi-metal, thermo, etc.	Bi-met. 50% Thermo. 50%	****	****	Bi-met. more than thermo.	Bi-met. highest %	****	50% of service calls due to pilot failure		8 Record 7 No record
Cause of pilot failures by type	*See below	****	****	****	Over-fired position	Gas, air adj.	Dust & lint stoppage Primary air	*See below Orifice plugg. ave. 47% Air port " " 45%	8 Record 7 No record
No. of pilots found on and not lighted	Negative	****	****	None	****	****	None	None	3 Record 12 No record
No. of pilots found turned off by customer	20,500 (10%)	****	****	None	****	Very few	38,000 (25%)	Ave. 20%	5 Record 10 No record
No. of pilots found turned down	Negative	****	****	None	Happens frequently Not a major problem	Large %	None using low B.t.u. pilots	1 Company Large %	5 Record 10 No record
% of househeating units needed cleaning where pilots were left on	Do not clean	None	****	% very small after 2nd yr.	Do not clean	Few	No record 2,100 total	1 Company 2%	4 Record 2 Do not clean 9 No record
% of househeating units needed cleaning where pilots were turned off	Do not clean	Negative	****	****	Do not clean	****	****	1 Company 17%	2 Record 2 Do not clean 11 No record
	*Bi-met. Fatigued metal Improper flame Dirty orifice and shutter Smothering High winds Loose conn. Therm. Loose conn. at pilot-stat. Improper position of couple Improper flame Dirty orifice and air open. Smothering High winds							**** = No record *Air port obstruction Orifice obstruction Position Dust & lint stoppage Primary air	

plaints of another company were on househeating pilots. One other company stated that 87 per cent of the pilots that failed needed cleaning.

Causes for pilot failures ran the gamut of those difficulties so well known to all of us: Air port obstruction, orifice stoppage, dust, lint, primary air adjustment, metal fatigue, location, etc.

Forty-seven per cent or the most frequent cause of pilot failure was stopped orifices. Obstructed air ports were a close second causing 45 per cent of the failures.

The bi-metal and thermocouple type were the most common in the field and, therefore, reflected the highest percentage of failures.



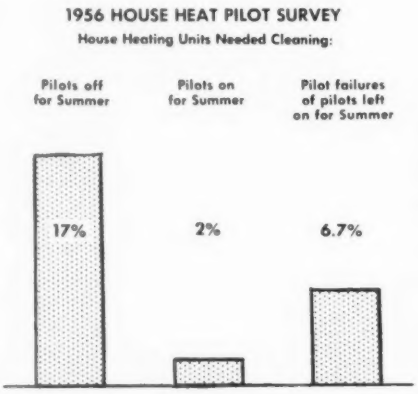
It is interesting to note that at least one company reported that a large percentage of their customers turned the househeating pilots down, which resulted in loss of heat to the element. One other company stated this happened quite frequently but it was not considered a major problem.

Many points of interest were found through the survey, but it appears that it has merely scratched the surface in determining what our househeating pilot problems are, and that it has revealed a definite need for further and more complete studies to be made in the future.

After seven or eight years of recommending that househeating pilots be left on during summer months, few of us keep any records that will indicate what advantages and disadvantages exist.

This state of affairs should be changed for our mutual benefit, through a knowledge of the facts. If we take advantage of our numbers, a program of this kind need not prove too cumbersome or require setting up expensive record centers.

It would be impossible and prohibitive to have each and every serviceman make a detailed report of every pilot serviced. The necessary information could be obtained by assigning just a small percentage, perhaps 5 per cent or



10 per cent of our servicemen, to make detailed reports of pilot problems found in the field.

The accumulation of data resulting from all our efforts would supply us with conclusive evidence for the formulation of future policy along these lines.

Such a program, regardless of the mechanics employed to obtain the information, should ultimately reveal the type or types of pilots that will give the best service to our customers at the lowest cost to them and to the company.

In order to accomplish this, we must know exactly what our problems are, and the only way to obtain this knowledge is to have definite answers to such questions as:

1. Percentage of househeating pilots left on during the summer months.
2. Percentage of househeating pilots in the field by types.
3. Percentage of pilot failures by types (Bi-betal, thermocouple, low Btu, high Btu, etc.).
4. Percentage of pilot failures of those left on during the summer.
5. Percentage of pilot failures of those left off during the summer.
6. Cause of pilot failures by types.

To evaluate the effectiveness of the summer pilot programs and the general pilot problems, we might then compare the answers to the above questions with:

1. The number of househeating units on our lines.
2. Number of requests for fall turn-ons and spring turn-offs.
3. Number of pilots turned on and off by customers.
4. Percentage of boiler cleans needed where pilots were left on for the summer.
5. Percentage of boiler cleans needed where pilots were left off for summer.

Having completed this evaluation and justifying the fact that pilots provide the most serious service problems, there are two obvious methods to use to reduce these difficulties. First we might legislate the undesirable pilots out of existence through American standard requirements or second, by specific recommendations to the manufacturers to improve their products.

Many remember the copper tubing and burner difficulties experienced years ago. The American Gas Association helped improve that condition by instituting appliance requirements that called for semi-rigid tubing to be internally tinned or equivalently protected when used on manufactured or other sulfur-bearing gases; and burner ports to be made of essentially nickel-free alloys, all but trace quantities being prohibited. Attempts have been made and are still being made to get requirements for nonaerated, or at least aeration-protected pilots.

Manufacturers want to know how their pilots are operating and what problems they are offering. When we have the necessary facts and figures, they will be more than willing to cooperate in research and development to provide the best pilot we have yet had.

All of us are interested in this phase of our work. In addition to the manufacturer, the Customer Service Committee and the American Gas Association Laboratories are willing and anxious to assist in any possible way.

Further and continuous househeating pilot study would be an excellent project for a national field observation program, and it is respectfully recommended that all concerned give it their wholehearted consideration and support in future plans and operations.

Acknowledgment

This article prepared from a paper presented at the AGA Distribution, Motor Vehicles, and Corrosion Conference, Chicago, 1956.

Telemetering and Remote Control Solve Dispatching Problems, Improve Service

Nearly 25 years experience has proven feasibility of automatic operations for Houston Pipe Line Company which now has extensive facilities on its 1200-mile system involving three different pressure ranges

Edwin M. DeMouche
Houston Pipe Line Company
Houston, Texas

To achieve the confidence of its customers, a gas company must operate in a stable and efficient manner. One way to do this is to supply the volume of gas at required pressure in accordance with customers' demands. Additionally, service should be available at all times with an absolute minimum of trouble.

One way to insure service of this type is through telemetering and remote control on a system-wide basis. That's the experience of Houston Pipe Line Company, which serves an area on the Texas Gulf Coast extending from Live Oak county on the west to Tyler county on the east, and with main terminal points of the system along the Ship Channel area in Houston and in the Galveston–Texas City area.

With both industry and utility connections located along its entire length, the system is subject to rapidly varying load demands from one end to the other.

One man in the company's central dispatchers' office, located on the 12th floor of the Petroleum Building in Houston, controls the flow of gas in the 1200-mile system. All operations concerning flow of gas from the well head to the customer are directed from this office.

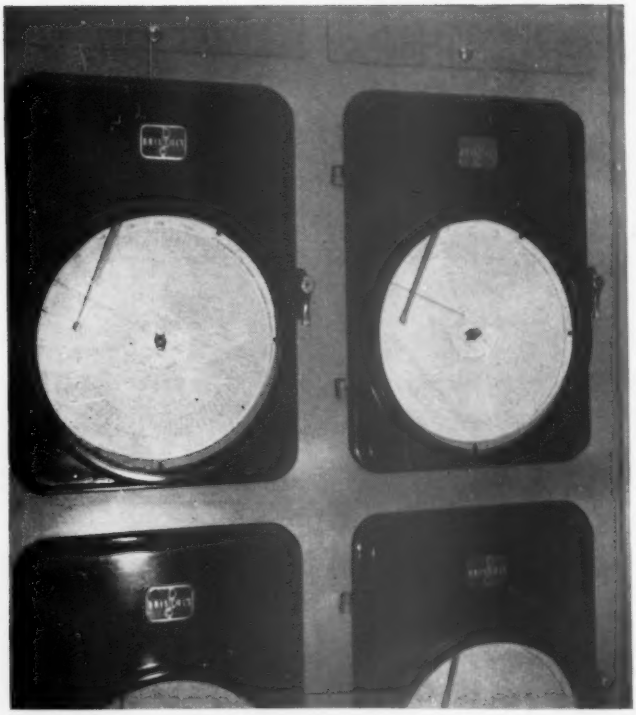
With its present system of telemetering and remote control, the company has a continuous recording of system-wide pressures in this office and with remote control, can maintain pressures under normal conditions without issuing a single verbal order.

A large portion of the system is low pressure. More recent construction is in the intermediate pressure range, and a newly completed system operates at high pressure. By necessity, the three different pressure systems may be operated as separate lines or they may be operated as a unitized network to meet any emergency demand.

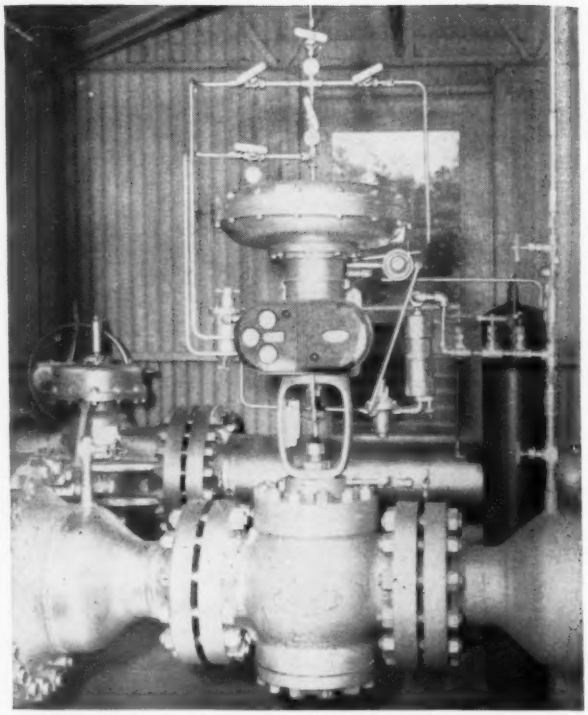
Telemetering System Installed

In order to operate these systems, telemeter circuits have been installed on the telephone system paralleling the pipe lines and also on leased circuits in other areas. These telemeter circuits are located at the origin and terminus of all important main and branch lines and at all remote control points.

Dispatcher's desk—a nine-foot, solid oak unit—has remote control panel in the center, two-way radio at right, telephone at left, and pressure recorders flush-mounted in steel panel (at center background) for easy visibility.



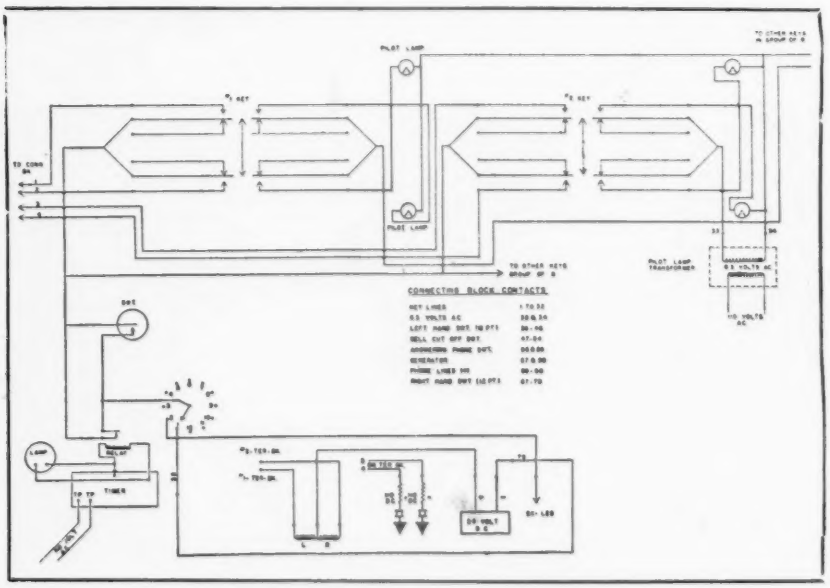
Indicating receiver chart shows variations in pressures during the remote control operation on 12-in. gathering line and 18-in. main line at remote point.



Control valve for gas flow regulation is positioned by remote control.

Remote operated regulators have been installed at crossover connections of the three systems, as well as on field purchase lines and on a gas storage project. By having continuous recording of pressures from these key points on the system, and being able to operate a regulator at far distant points from the dispatcher's office by pressing a button, it is possible to keep the three systems in balance at all times.

Automatic remote operation on Houston Pipe Line Company's system began in the '30's with the installation of a floating mercoid switch linked to the lever arm of a weight and lever type regulator — which by a circuit on the simplex leg of a telephone line lit a lamp in the dispatcher's office, indicating a change in flow through the regulator by the movement of the lever arm.



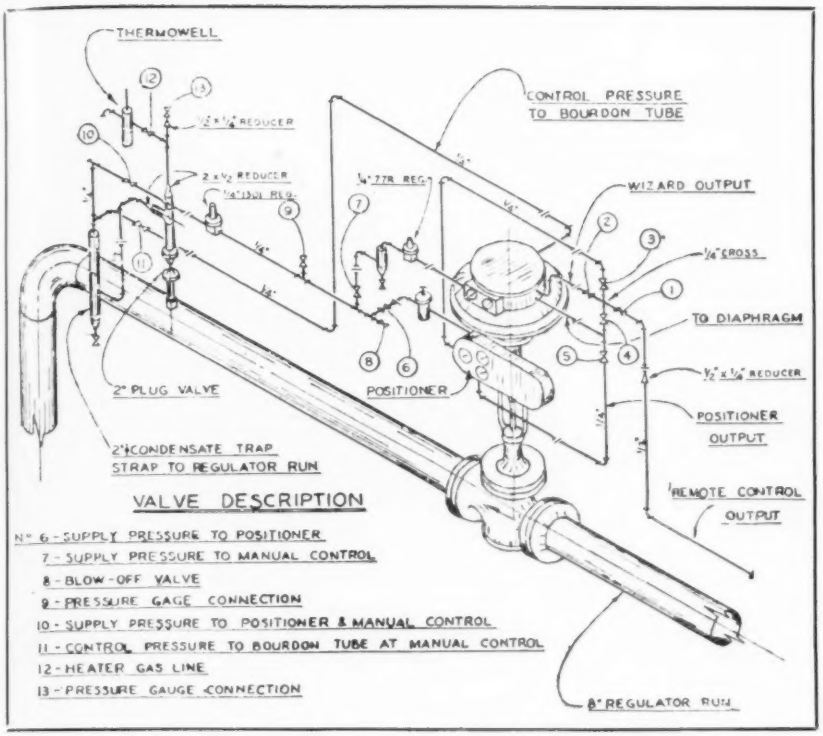
Details of circuitry of remote control panel are shown in this diagram.

With this early beginning, the first telemeter was installed in 1940 in conjunction with a pressure booster type regulator on a major sales point to a utility. This installation soon justified itself not only from an economic aspect (it relieved four and one-third men to the war effort) but also eased the operating problem of the dispatcher and gained the confidence of the utility to the extent that they requested similar installations at all major points where they were served.

As the utility load increased along the system, it became necessary to have more accurate control of field purchase gas to pack the main transmission lines for peak loads in winter as well as to pull main lines down for long summer weekends.

To meet these dispatching requirements, the first remote-operated regulator was installed in 1947 at the junction point of a 12-in. field gathering line with the main transmission system. There were 26 dry gas wells connected through individual reducing regulators to the gathering line. A telemeter circuit was connected to both the high and low side of the remote-operated regulator giving intermittent recordings of the field line and main line pressure on the same receiver in the dispatcher's office.

As the telemeters on the utility sales points and on the main line indicated a requirement for more gas, the dis-


THERMOWELL
CONTROL PRESSURE TO BOURDON TUBE
WIZARD OUTPUT
TO DIAPHRAGM
POSITIONER
POSITIONER OUTPUT
REMOTE CONTROL OUTPUT
2" PLUG VALVE
2" CONDENSATE TRAP STRAP TO REGULATOR RUN
8" REGULATOR RUN
VALVE DESCRIPTION
N° 6 - SUPPLY PRESSURE TO POSITIONER
7 - SUPPLY PRESSURE TO MANUAL CONTROL
8 - BLOW-OFF VALVE
9 - PRESSURE GAGE CONNECTION
10 - SUPPLY PRESSURE TO POSITIONER & MANUAL CONTROL
11 - CONTROL PRESSURE TO BOURDON TUBE AT MANUAL CONTROL
12 - HEATER GAS LINE
13 - PRESSURE GAUGE CONNECTION

Piping and operation of remote-controlled regulator are shown in this isometric view.

patcher could actuate the remote-controlled regulator causing the pressure on the field line to drop. As the field line pressure dropped, the pressure reducing regulators on the individual wells opened, attempting to maintain their set pressure in the field line, thus increasing delivery from the field.

Each well was protected from overproduction by the installation of a positive choke in the Christmas tree. Conversely, when line condition reflected a drop in load, the above procedure could be reversed, shutting in the field or practically shutting it in as the occasion required.

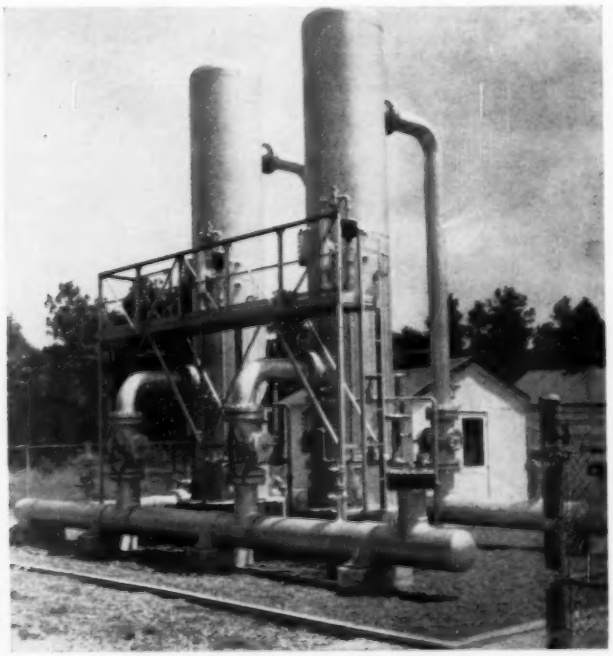
Following the war, the construction of long lines to the North and Eastern U.S. changed the competitive position of the company, in regards to purchasing gas in the field. The dispatcher became involved in take-or-pay purchase minimum contracts with a maximum delivery clause. At the same time, the competitive market in the sales area no longer permitted the sale of interruptible service to industry, so the company today has nothing but firm sales to both industry and utility customers.

Faced with this situation, the company embarked on an expansion program involving both a storage project and a high pressure transmission system. In the over-all planning of this expansion, it was decided that telemetering and remote control should be integrated into the system so that it could be operated automatically from a central dispatcher's office.

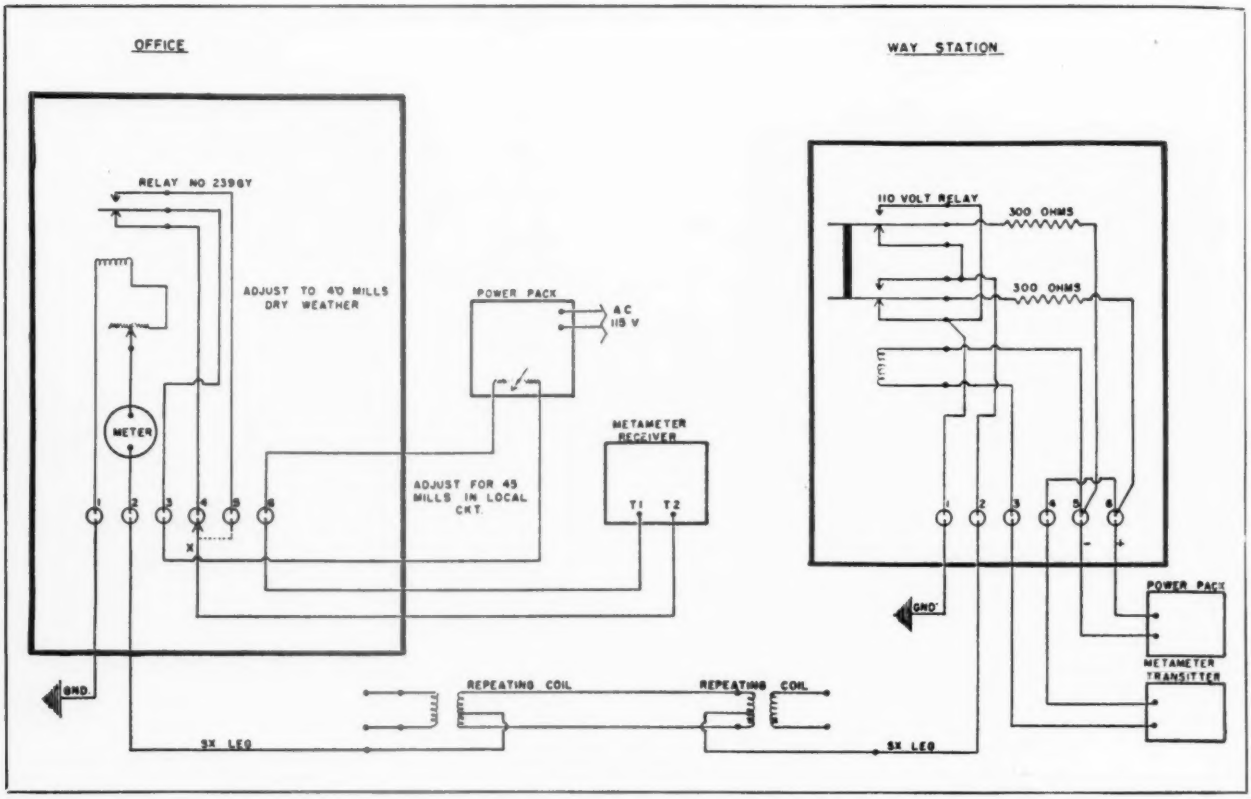
In the existing dispatcher's office at that time, all receivers were surface mounted and remote operating keys had to be held in position and timed with a stop watch. This kept the dispatcher occupied and delayed other handling of office business. As a result, a new office equipped to require the minimum of handling, and to increase efficiency of system control was developed.

A solid oak desk was designed in a "U" shape and built locally. It measures nine feet across, and the U shape allows the dispatcher to be seated near the special turret in front, and affords ease in handling telephone calls on

Instrument panel board at remote location shows remote control and cam.



Scrubber installation at junction of high and intermediate pressure systems.



Polar circuit for morse leg metameter operation is shown in this diagram.

the left and operation of the two-way radio on the right. Across the room and directly in front of the desk is a steel panel with the meters flush mounted, all easily seen from the dispatcher's position.

Interval timers, remote selector keys for remote operations, and selector keys for private telephone lines are located in a panel on the desk turret. Automatic operation is accomplished by lacing the proper key in the raise or lower position as desired. Red lamps indicate raise and green lamps indicate lower.

The selector switch is set for the corresponding number key to bring the circuit into the timer. The timer is then set to operate from 1 to 120 seconds as desired, and the button is depressed. A red pilot lamp indicates the circuit is in operation.

Actual setting up of this operation requires very little time. After the button is depressed, the dispatcher is free for other duties. When the operation is complete, the pilot lamp goes out, indicating the timer is available for other operations. By having a divided turret with two interval timers, it is possible to operate two remote circuits simultaneously.

Telemetering has saved the company many times its original cost in ordinary day-to-day operation. Its true value is pointed up by specific instances where continuous recordings have prevented serious interruption of service and possible damage to the transmission system.

In the first winter of operation after installation of the new system, the dispatcher noted an abnormal pressure drop between two points on the transmission line with a rise in pressure on the field end, indicating an obstruction in the line.

On this indication, he routed a district crew to the area and the obstruction was broken up with alcohol injection, thus preventing any damage or interruption of service to the line.

On another occasion, an unexpected pressure increase from a remote-operted regulator station indicated a sharp drop in load through an unattended meter station serving a large customer in the immediate area. This particular station was delivering a fixed volume of gas and was controlled by a recording differential controller. A man was sent to investigate and with remote control, the dispatcher routed gas out of the area.

Upon arrival, the man found the chart had become wrinkled on the recording controller and had seriously reduced the delivery through the station by lowering the set point on the instrument.

Without the rapid remedial action resulting from the telemetered information, the sales station would have been completely shut in, adversely affecting the customer's business.

Since that time, the recording differential controller has been converted to an indicating type, but the incident still stands out as evidence of the operating value of the telemetering and remote-control system.

Other changes have also been brought about by the installation and successful operation of the automatic system. The two large utility customers in Houston and Galveston areas have also converted their purchase regulator stations from pressure booster type to remote-control type after observing the ease of operation of the system.

Their conversions have aided their operation and have served as a peak shaving device to Houston Pipe Line. Before the conversion, the peak load in both areas came at the same time to the transmission system. Now, the two utilities are able to pack their lines before demand increases, thus decreasing maximum peak hour requirements.

The company has also installed telemeters on the utility systems, giving it a better picture from which to operate its transmission system more efficiently.

This article was based on a presentation made at the AGA annual convention in Los Angeles, October, 1955.

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3882

Tenth of a series

What Management Can Do To Improve Communication

Dennis Murphy

A breakdown in communication is just as costly, dollar-wise, as the breakdown of a machine, pump, or pipe line. Although we don't compute the costs of communication failures, we know they're mighty large. Yet we can actually prevent breakdowns in communication, whereas we can't avoid them in machinery.

Let's talk about communication within the company rather than with the outside public. And let's assume the normal use of oral and written messages such as the company's magazine, bulletins, annual report, and the like. Now let's come clean: isn't there a lot of room for improvement?

Top Management Sets the Tone

By "management" we mean everyone in a supervisory capacity. This includes not only officers and executives who formulate aims and policies, but also every other supervisor who helps to carry them out on the executive, departmental, and first-line levels. And success or failure of communication, in the final analysis, depends upon those supervisors nearest to the workers themselves — that is, upon group leaders, section heads, and foremen who directly manage the smaller units of employees.

How can we bridge this silent gulf between managers and workers? How can we democratize the company — so management will consider labor cooperative, and labor will consider management communicative?

This seems the crux of the problem, and its solution is up to the *whole corps* of managers, not the top men alone. They can improve the communication in all directions—and they're doing it!

Some Causes of Poor Communication

1. **Attitude of Employees.** Some older executives inherited a hush-hush attitude from the nineteenth-century tycoon who was the sole owner of his business and ruled it with a hard hand. Today, most companies are multiple-owned and multiple-managed. But some managers, even those who consider themselves progressive, withhold a lot of information from employees.

A secretive policy about confidential matters, of course, is valid and necessary. As in a family, parents share some knowledge that children are not let in on, and all of them share information that neighbors and in-laws are not told. But the wholesale policy of telling rightful members nothing is autocratic, paralyzing, and dangerous.

Messages get twisted, diluted, and distorted as they pass through normal channels. Some bosses sift facts and feelings; others slant them. Often a boss who tells his men nothing will stoutly resent *his own boss* for not telling him everything! And many a boss thinks talking with his men lowers his dignity, wastes time, fosters complaints, or invites misinformation.

Poor communication is often *intentional*. Some self-important little supervisors keep others in the dark — to build themselves up as storehouses of indispensable news. "Why didn't you come to *me*?" Another type says he doesn't have time to communicate. He's a liar. Either he lacks leadership, or he hasn't mastered his job. In either case, he's a liability because his lack of communication harms the organization.

The attitude of workers is just as important as that of managers, if not more. Workers are often silenced by rank, title, salary, education, physical surroundings, and wordly possessions. Any feeling of superiority or inferiority hampers communication, and the first step toward solving this problem should come from the man with the "seeming" advantage.

Employees will renege in passing adverse facts upward, too, and usually sugar-coat them to soften the blow. Some won't report bad news at all unless they know they'll get caught or catch hell if they don't. Yet on a recent questionnaire 140 out of 200 executives *said* they got accurate and uncolored information from the men who report to them.

On the other hand, some employees like to paint facts worse than they are; despite their show of sympathy, they enjoy

doing this because they get a satisfaction out of releasing their own opposition to their boss.

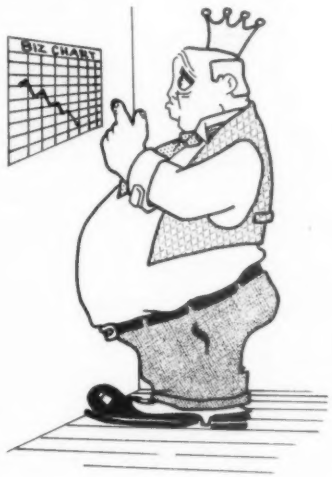
Workers have a right to share appropriate information. Mistrust begets mistrust. When managers won't share allowable facts that further the common purpose of the company, workers become interested in little except the time clock and their pay check.

They fail to realize that *they* can never prosper unless their company and colleagues *also* prosper. When communication fails or breaks down, it leaves a void that separates interests of the workers from interests of the company. If it does, look out! Things can happen then.

2. **Increased Size of the Organization.** As a firm grows, its informal communication usually decreases while its formal written work increases. This is natural and inevitable. The head of a small business can call all his men together for a daily meeting; but a top manager in a large company knows only a few men on the higher levels — and may never even see the rest.

Likewise, as a company grows, physical distance grows between top management and workers. More levels of middle management — where communication so often breaks down — are added until some firms have 15 or 20 levels, more than we find in the army.

In the last 25 years, or even 10 years, business and industry have undergone tremendous changes. Individual for-



Study the facts

tune-making is becoming more rare, while the number of stockholders is increased by reducing the price of shares so that the lowest-paid worker can buy them. Far-seeing companies help their employees do this and offer many other benefits to boot.

Decentralization of large companies is one attempt to shorten the physical distance between top management and workers, promote better communication, and gain more democratic operation. As Benjamin Fairless of US Steel says, our people "expect American business to be run in the long-range interests of the public."

3. **Increased Complexity of Work.** Business and industry have always been more authoritarian than our schools, churches, and government. In some matters business should remain authoritarian and not await the vote of a majority — as in planning, financing, expanding or curtailing production, hiring certain employees, and the like.

But that's all the more reason why a company should be democratic in matters where the workers' ideas are appropriate and valuable. How can we reconcile the freedoms of expression our workers have grown up in — at home, in school, and in society — with the restrictions they find in business? Our future managers should probe these problems of communication, because whoever controls communication in the future — will control!

Size, complexity, and specialization make it hard for a worker to comprehend a large organization or understand his part in it. He may even lose interest in expression that answers his need or his creative urge. Every other man seems like a technical expert — an efficiency engineer, cost accountant, advisor, or inspector of some kind.

Tending to see work only from his own point of view, a man can grow indifferent to the human touch. Result: lack of communication. We can also communicate like hell and get nothing done — depending on the people we work with. *And some people are by nature very uncommunicative!*

Perhaps we ought to question some of our business traditions. Do our "regular channels" really do the communication job as they should? Or do we need more direct avenues? How can we find out quickly what's going on up or down the line without short-circuiting somebody? Is fear of undercutting the supervisor's authority holding us back in examining the channels critically? Would more channels help make more flexible and circumspect supervisors?

What effect will automation have on the complexity of our work? What effect will automation have on intracompany communciation? Is it possible to have too much communication? If so, how can we get more satisfying participation without losing control or morale? We don't know the answers, but we raise these questions to stimulate further thinking.

Reasons for Better Communication

Some values of *upward* communication are that it: (1) forewarns top management about what policies are acceptable, and when; (2) shows whether men understand the meaning of directives; (3) gives workers a release for emotional tensions and pressures; and (4) allows them to offer valuable ideas to their supervisors.

Some values of *downward* communication are that it: (1) helps all managers' authority to be accepted and obeyed; (2) shows in a democratic way what common targets to aim at; (3) expresses a friendly interest that builds morale everywhere; (4) evokes cooperation and helps solve problems.

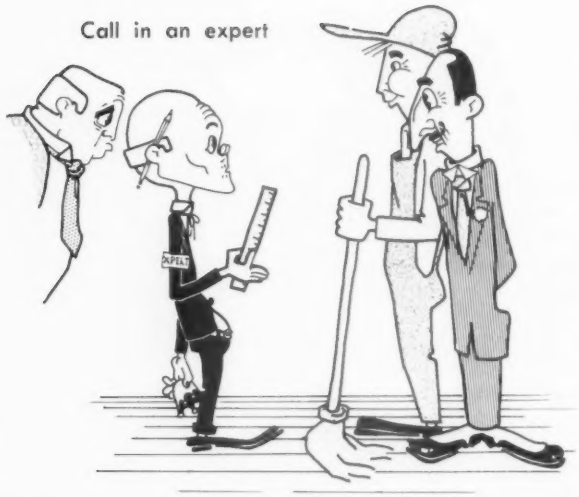
All employees, managers, and workers alike, need more and better communication. Managers need it — to live longer, if for nothing else. Medical advisors say businessmen under pent-up emotional strain are the most frequent victims of ulcers and heart attacks. Instead of inhibiting their feelings continually, they need to "blow up" occasionally—as a safety valve for their pressures — not at persons, but at conditions and things! Sometimes they're as meek as Moses at work, but petty tyrants at home. That's bad.

Workers, likewise, have an immense need for *self-expression*. They also need the feeling that they "belong," the sense of *participation* that's so highly important. In addition, they require a *catharsis* (or a purge) for personal tensions on their jobs. And when their opinions and suggestions are welcomed, they find a *creative outlet* for their ideas. These four needs for employee communication should be enough to convince any executive of their tremendous value.

How Management Can Improve Communication

1. **Through Communication Training.** Any mention of improving communication implies, unfortunately, that it's not up to par. I don't want to imply this, because some companies may already enjoy all the communication they desire. Nor do I wish to imply that my own company has gone as far as I indicate, because it hasn't! But if improvement is our aim (as I think it ought to be), a few suggestions may prove fruitful for a sizable organization.

Many factors, of course, should be considered to determine the need and extent of communication training: size of the company, the nature of its product or service, its competition



in the market, its personnel, and so on. The need for communication training, for example, may vary from none in a small cannery of 40 employees to much in an insurance company of 4000 employees.

The *first step* is for top management to assign the training job to some existing unit or create a unit that will work with all departments. All of management should support this training fully and check its results. The logical checks are natural feedbacks, opinion surveys, questionnaires, and — best of all — clearer thinking, better speaking in conferences and committees, simpler memos, friendlier letters, and more readable reports.

Much depends upon the supervisor of this training. Skilled in all forms of communication, he should value common sense more than college degrees or test scores. Since he will work with adults of various capacities, he should adapt instruction to the individual. Always mindful of the company's policies and purposes, he should *show* how as well as *tell* how.

He'll need plenty of patience, lots of tact, a sense of humor, and a sound working knowledge of psychology. If he can stimulate employees to think, read, write, and speak as they never dreamed they could, he's all right! For his main purpose is to draw out their best efforts for their jobs, and to make those with little formal schooling realize *how* they can live, rich, happy, useful lives.

The *second step* is to set up courses in all communication skills — thinking, observing, writing, reading, speaking, and listening. These courses should reach those employees first who need them most, but they're fine morale builders for *all* workers, especially those on routine jobs such as the operation of machines. Courses can be like "coffee breaks" — yet more valuable because learning is fun! Keep them laughing while they learn! According to Dr. Gallup, the unhappiest of all people in America are factory workers in our large cities.

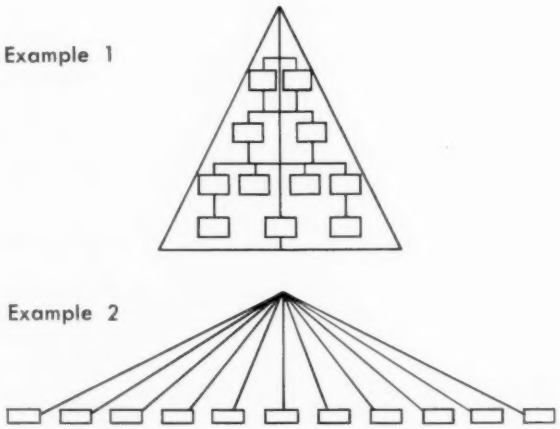
Employees who attend a one-hour class three times a week on company time and money must, of course, make up their regular work. Their work always comes first, but they learn short-cuts and simpler methods in communication that save time. Because rush jobs and emergencies affect attendance, courses should be properly timed. Short 4 to 6-week courses that reach employees frequently are less likely to be disrupted than longer ones.

Courses should be kept going, year in and year out. Some of the most profitable ones are those in business letter writing, technical report writing, word study, vocabulary building, sentence structure, punctuation and spelling, principles of speech, public speaking, speed reading, reading great books, detecting fallacies in thinking, and creative thinking on the job.

Quite a large order, isn't it? Each company needs to determine how much its communication training should be stressed, and where. The supervisor of this work may need assistants; if so, trained employees with a first-hand acquaintance of inside roadblocks may prove more valuable than imported assistants.

2. **Through Reorganization.** Recent research indicates that our business communication is often influenced as much by company setup as by human personality. An employee in a strategic location where many channels converge is frequently a person others regard as a leader. Knowing what's going on is a requirement of democratic leadership. And since horizontal communication is easier to achieve than vertical, a good many managers advocate rearrangement of the company structure to step up communication.

Sears Roebuck, for example, has for years organized its retail stores along two general patterns: (1) the centralized and compact pyramid with many levels of rank, and (2) the spread-out and horizontal fan with more emphasis on delegated authority. These two figures will show roughly the difference:



Questionnaires by Sears on both types of organization showed that the spread-out type rated higher in morale, in communication, in promotable young men for executive positions, and in flexibility needed to adjust to sudden change or crisis. This type also came up with about the same efficiency and number of sales as the pyramid type. But the surveys showed that men who had been conditioned by the pyramid type didn't like the looser setup, and vice versa. As James C. Worthy of Sears says, "To change the structure, you have to change the guys."

On the other hand, some men believe a large company fares better with more levels of authority, not fewer. Some firms like Du Pont & Company have thirteen levels, about the number we find in the army, and fare as well as Sears with less than half that number. Forty-two executives report to one boss at Sears; the span of control is much tighter at Du Pont.

Professor Alex Bavelas of MIT and others elsewhere have experimented with communication in both the traditional pyramid and horizontal structure. Those who were allowed to communicate on the same general level proved happier in their work than those forced to buck the "regular channels," even though not quite so efficient. Those working out their problems on a common level showed more adaptive ability and survival power. In the long run, democracy came off better than the autocracy with "its great big wall."

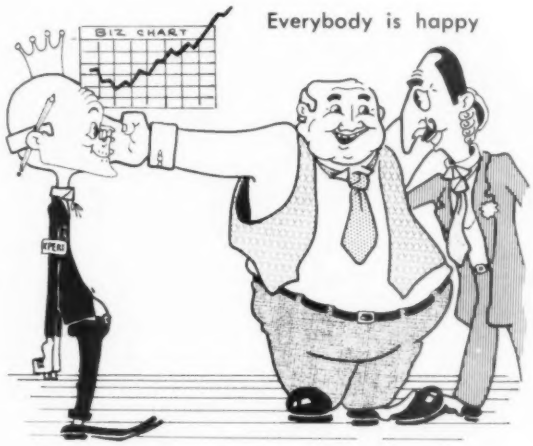
To shorten the vertical line is to make communication more direct. This shortens physical distance, minimizes the stress on rank, reduces the number of bosses, and lessens organization complexity — four known barriers to communication

And to broaden the horizontal span of control is to give communication more freedom and equality. This promotes a cooperative interchange of more accurate and speedy messages.

By the law of diminishing returns there must be a point where communication can lose with too loose a structure, just as it can with too rigid a one. Therefore, each company should adopt the structure that works best for it in the light of many conditioning factors.

3. **Through Management Development.** In any type of organization structure, managers must delegate authority to those reporting to them to free themselves for their best work. In the truly decentralized and rather "flat" structure, there are fewer supervisory levels and broader spans of control, less intercession from above and more need for self-reliance.

The delegation of authority, with its attendant responsibility, is the basis of decentralization; and the art of making wise judgments is the basis of good management. Even with the right personal qualifications and background, the future manager needs to grapple with problems, make mistakes, and



learn from making them. His development depends, in a basic way, upon organization structure and "creative experience" that will allow him to develop.

To realize both the greatest morale and efficiency and to guarantee a succession of better-trained managers, executives are turning to communication for the full development of younger men with the potential for key jobs—not this year or next, but five or ten years hence.

Short courses in an eastern university, appointment on a committee or two, and a little job rotation here and there (helpful as all these are) won't turn the trick because they don't go far enough. One trend is toward the general education of managers to round out their technological training.

Management development actually calls for thorough training in all the communication skills — thinking, observing, writing, reading, speaking, and listening. It should grow out of the company's own soil, not be some imported package-deal in 10 easy lessons! It should include everything top men ought to impart and their successors need to learn. It should develop young men to become informed and communicative in the broader fields of the liberal arts and humanities as well as in their own special fields.

This development of human resources depends on all channels and all forms of communication. It uses all the techniques of clinics, seminars, cabinets, round tables or panels, and role-playing groups. It cuts through all levels. It offers practical training in the processes of logical and creative thinking; the faster reading of books and articles; the writing of simpler memos, letters, and reports; and the practice of making effective talks.

4. **Through Employee Conferences.** Many companies outgrow their close touch with employees, awaken to their loss of this old intimacy, and set up conferences where management and workers can get together informally. Here they can let their hair down, swap ideas, exchange points of view, and air all their written and oral gripes.

Many men, growing older themselves, feel lost in the changing shuffle of their rapidly expanding company. Sometimes they quit; frequently their labor unions actually give them the latest dope about their own company! Management should not let that happen.

5. **Through Interest in Employees' Families.** We can't hire men and ask them to sacrifice more than half their waking hours with us — without affecting their wives and children, who share that sacrifice. What do we share with them in return? A big-name jazz band and company dance once a year? A picnic or "beer bust" once a year?

One company with 100 graduate engineers recently inaugurated a family discussion group and offered its conference room two evenings each month to employees and their families. Most of these engineers had married college women who, after struggling all day with babies, were starved for communication with others on all kinds of subjects. They discussed home purchase and insurance, interior decorating, politics and religion, great books — everything.

Many companies have set up a "family night" for employees each month; others offer college scholarships for children of their employees. The possibilities for better communication with families have scarcely been explored.

6. **Through More Publications.** The company magazine once a month is fine, but it's not enough. We need more attractive booklets to guide new employees on plant tours, to tell how the business is financed, to explain how mergers are effected, to describe the pension plan or the new IBM machine, to improve the quality of work and reduce waste, and so on. And we need more visual aids, colored slides, and films to present information quickly and vividly.

Too many communications in the past have merely bragged about "what we have done." More booklets in the future should *educate* employees on what the company aims to accomplish, how they stand to gain, and what they can do to help solve top-drawer problems. More communication is needed to *inform* all employees, *inspire* them, and *enlist* their active cooperation in solving our common problems.

It's Up to Management

If management will only *use all these tools of communication* and many more, employees will come through. They'll respond. And they'll help management face any future problems, crises, or emergencies. They're crying to share in the company business.

Communication helps all employees to become more articulate and democratic. And when it functions for so many significant purposes, it means communication at its best in business.

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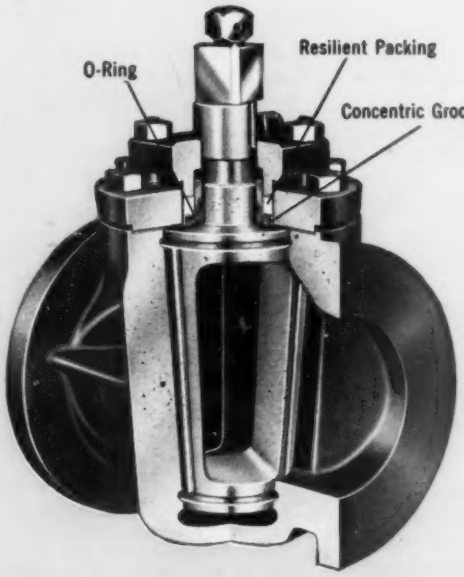

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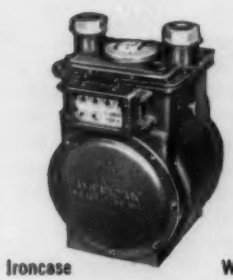
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